

# *WASHINGTON STATE CHILDHOOD INJURY REPORT*

*Washington State Department of Health  
Injury Prevention Program*





## To Our Partners in Injury Prevention

Injury is the leading cause of death and disability for Washington children. In fact, injury causes more deaths to children each year than everything else combined. The Washington State Childhood Injury Report addresses this serious health issue.

The good news is that the vast majority of childhood injuries are preventable. We can reduce the number of injuries and deaths by educating adults and children about the best way to prevent injuries, promoting prevention strategies, providing safety devices to families in need, and by supporting laws that empower families and communities to protect children.

The Washington State Department of Health works closely with our partners on this important work. I hope you will find this report a helpful tool and will use it as part of your efforts to prevent injuries.

Thank you for being a partner with the Department of Health as we strive to make Washington State safer and healthier.

A handwritten signature in blue ink that reads "Mary C. Selecky".

Mary C. Selecky  
Washington Secretary of Health

**PUBLIC HEALTH**  
ALWAYS WORKING FOR A SAFER AND  
HEALTHIER WASHINGTON

# WASHINGTON STATE CHILDHOOD INJURY REPORT

*Washington State Department of Health  
Injury Prevention Program*

**September 2004**

Jennifer Sabel, Lead Author  
Washington State Department of Health  
Injury Prevention Program  
PO Box 47832  
Olympia, WA 98504-7832  
360-236-3756  
[jennifer.sabel@doh.wa.gov](mailto:jennifer.sabel@doh.wa.gov)





# TABLE OF CONTENTS

---

Executive Summary .....	1
Introduction .....	3
Overview of Injury Among Children in Washington .....	5
<b>Injury by Cause</b>	
Motor Vehicle Occupant .....	12
Suffocation .....	18
Drowning .....	22
Firearms.....	27
Pedestrian .....	32
Poisoning .....	36
Fire & Burn .....	40
Bicycle .....	44
Falls .....	49
Homicide & Assault .....	53
Suicide .....	58
Child Abuse & Neglect .....	63
Occupational.....	68
<b>Injury by Age Group</b>	
Under 1 year old.....	72
1 to 4 years old.....	74
5 to 9 years old.....	76
10 to14 years old .....	78
15 to17 years old .....	80
<b>Appendices</b>	
A. How to Read this Report.....	82
B. Data Sources.....	84
C. E-code Matrices .....	88
D. Technical Notes .....	90
E. County Data .....	92
<b>Acknowledgements .....</b>	<b>Inside Back Cover</b>





# EXECUTIVE SUMMARY

---



In Washington State and throughout the nation, injuries are the leading cause of death for children 1-17 years old. Injuries are often called "accidents," suggesting that they are unpredictable and unavoidable. However, research shows that the vast majority of injuries can be prevented.

This is the tragedy of injury – most of the resulting deaths, disabilities, and disfigurements need not have happened. In addition to the tremendous burden of grief on families, injuries cause a significant burden on state resources in terms of costs, lost productivity, and long-term disability.

While every child is at risk for injury, some groups are at higher risk. Age, gender, and geographic location are significant risk factors for injury and death. Children under 1 year old, adolescents 15-17 years old, and males have the highest death and hospitalization rates among all Washington children. Children living in rural areas of the state, in poverty, and in families with lower educational attainment are at disproportionate higher risk of injury.

Similarly, certain types of injuries affect some groups more frequently. For example, American Indian and Alaska Native children nationally have disproportionately higher death rates from motor vehicle crashes, and homicide is especially high among young African American males.

The purpose of this report is to provide an overview of the leading causes of injuries among Washington children, as well as best practices for injury prevention. Our goal is to provide injury prevention strategies in a readable, useful format, so that the prevention messages can be easily shared with the public. The recommended prevention strategies are based on research, literature review, and applied best practices. By putting the recommendations into place in homes, schools, and communities across the state, Washington can be a safer place for children.

## KEY FINDINGS ABOUT CHILDHOOD INJURY IN WASHINGTON STATE

---

### **Among Washington children 0-17 years old:**

- Injury continues to be the leading cause of death for children over one year old.
- The vast majority of injuries are preventable.
- The leading causes of childhood injury-related death during 1999-2001 were motor vehicle crashes, followed by suffocation and drowning.
- The leading causes of childhood injury-related hospitalization during 1999-2001 were injuries due to falls, followed by poisonings and motor vehicle crashes.
- The majority of injury-related deaths and hospitalizations were unintentional.
- Substantial disparities exist for childhood injury with higher injury rates occurring among infants and teens (15-17 years old); males; African American, Native American and Alaskan Native children; children living in rural areas of the state; and children who live in census tracts with higher rates of poverty and lower educational attainment.
- Impairment by or use of alcohol and/or other drugs among supervising adults and older children is a risk factor for most causes of injury.

## KEY FINDINGS (CONTINUED)

---

- Injury-related deaths have decreased over the past 20 years for all age groups, except for infants. Injury-related death rates decreased by about 52 percent for children 1-4 years old, about 48 percent for children 5-9 years old, and about 43 percent for children 10-17 years old.
- During the past 20 years, the motor vehicle crash death rate decreased by about 28 percent, the drowning rate decreased by about 54 percent, the fire and burn death rate decreased by about 53 percent, and the pedestrian-related death rate decreased by about 69 percent.
- Some causes of injury-related deaths<sup>1</sup> declined for certain age groups, but not others.
  - Motor-vehicle crash deaths declined for teens (15- 17 year olds), but not younger children (0-4 or 5-14 year olds).
  - Drowning deaths declined among younger children (0-4 or 5-14 years old), but not older children (15-17 years old).

## KEY PREVENTION STRATEGIES OF THIS REPORT

---

- Motor vehicle occupant injuries can be prevented by increasing the availability of child safety seats and education to parents, enforcing the graduated licensing law for teen drivers, and enforcing seat belt and child safety seat laws for vehicle occupants.
- Suffocation injuries can be prevented by putting infants to sleep in an appropriate crib environment, supervising infants while eating, ensuring children play with age-appropriate toys, and promoting caregiver awareness of suffocation risk for young children. Strategies to prevent self-harm from hanging are included in the Suicide chapter.
- Drowning prevention strategies include caregiver supervision, enforcing regulations requiring life jackets for children on boats, pool fencing and barriers, swimming lessons that include open water instruction, the use of certified lifeguards in public swim areas, and education and awareness programs for children and adults.
- Fall injuries may be prevented by using stationary activity centers for infants instead of those on wheels, having safety gates at the top and bottom of stairs in homes when young children are present, installing window guards, and having playgrounds meet safety guidelines.
- Strategies that may prevent poisoning injuries include educating families to eliminate potential hazards, calling the national poison hotline, and preventing drug abuse. Strategies to prevent self-harm from poisoning are included in the Suicide chapter.

<sup>1</sup> A time trend analysis by age group was only completed for those injuries when there were at least 20 deaths in each age group.

These included injuries due to: motor vehicle crashes, drowning, suffocation, suicide, and pedestrian-related.



# INTRODUCTION



In Washington State and throughout the nation, injuries are the leading cause of death for children 1-17 years old. Injuries are often called “accidents,” suggesting that they are unpredictable and unavoidable. However, research shows that the vast majority of injuries can be prevented. This is the tragedy of injury – most of the resulting deaths, disabilities and disfigurements need not have happened at all. In addition to the tremendous burden of grief on families, injuries cause a significant burden on state resources in terms of costs, lost productivity, and long-term disability.

The purpose of this report is to provide an overview of the leading causes of injuries among

Washington children, as well as best practices for injury prevention. Our goal is to provide injury prevention strategies in a readable, useful format, so that the prevention messages can be easily shared with the public.

The “*Washington State Childhood Injury Report*” is a report from the Injury Prevention Program with collaboration from the Office of Maternal and Child Health, and data and technical support from the Office of Emergency Medical and Trauma Prevention and the Center for Health Statistics at the Washington State Department of Health.

The target audiences for this report are individuals and organizations in Washington State interested in injury prevention, including health care providers, emergency medical service professionals, SAFE KIDS Coalitions, Child Death Review (CDR) teams, local health jurisdictions, child passenger safety teams, injury prevention professionals and groups, such as the Drowning Prevention Network, and the media.

This report includes chapters that focus on the causes of injury (also called the ‘mechanism’ of injury), as well as chapters that identify the leading causes of injury by age. Included in these chapters are recommended ‘best practices’ for prevention at the individual and community level. These practices are based on research, literature review, and applied best practices.

## Key Terms Used In This Report

### Intent

- The terms “intentional” and “unintentional” are used in this report to indicate whether or not the act was intended to harm a person.
- For example, injuries to children who fall from a bicycle or are burned in a house fire are *unintentional* injuries, while assaults to a child or self-inflicted injuries (suicide) are *intentional* injuries.
- Unintended injuries may be called intentional even if causing injury was not the primary motivation. For example, when a caregiver is trying to quiet a child they may not have intended to injure the child, but as a result of their actions the child was injured.

### Rate

The term “rate” is also used extensively throughout the report. A rate is the total number of occurrences in a specified time period divided by the total population in that same time period. That number is then multiplied by 100,000. For example, the injury death rate for Washington children ages 0-17 is 14.4 per 100,000.

See Appendix A for additional explanation of rates and definitions of other terms used in this report.

## Severity of Injury

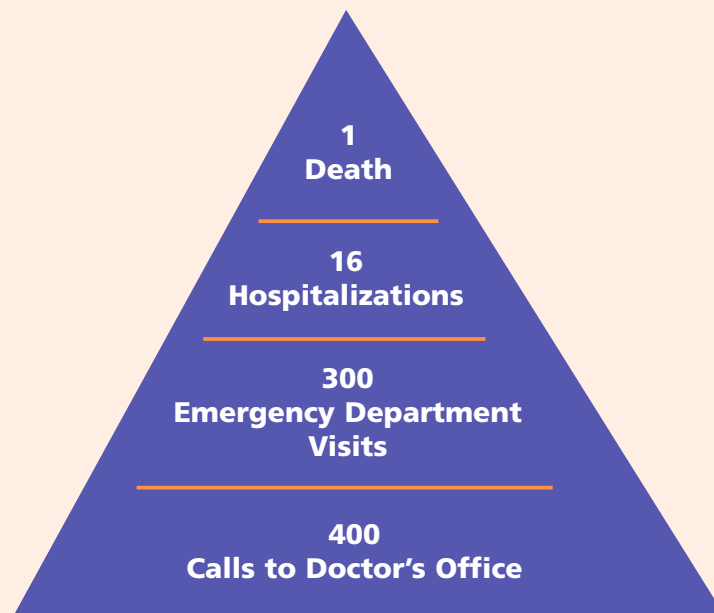
Data in this report includes injuries that result in death or hospitalization.<sup>1</sup> An estimate of emergency department visits is also included, and is based on data collected from a representative sample across the nation because Washington State data are not collected. Injuries treated in doctors' offices or clinics, at home, or other places are not included in this report because the information is not collected statewide.

While the injuries in this report reflect the most severe outcomes, they also represent a small part of all injuries or "the tip of the injury pyramid". Data derived from the most severe injuries may provide a skewed picture of all injuries. However, severe injuries are also the ones that would be the best to prevent. Many minor childhood

injuries that result in scrapes and bruises may be an important and normal part of children's experimentation with their environment, but may not need to be the focus public health intervention efforts.

The injury pyramid is the most commonly used model of injury severity, and is also useful for emphasizing the burden of injury on the health care system. Severity is displayed on the pyramid by the level of medical intervention. The injury pyramid using Washington State data during 1999-2001, shows that for every childhood death caused by injury, there are about 16 hospitalizations, 300 emergency department visits, and about 400 calls to a physicians' office.<sup>2</sup>

**The Injury Pyramid  
Washington Children  
Ages 0-17, 1999-2001**



# OVERVIEW OF INJURY AMONG CHILDREN IN WASHINGTON



The data in this report focuses on 1999-2001, the most current information available when the report was started. Three years of death data were combined in order to provide a larger sample for detailed analysis. During this time period, injuries claimed the lives of 654 Washington children ages 0-17, and there were 10,317 hospitalizations due to injury.

The injury death rate for Washington children 0-17 years old is 14.4 per 100,000. Motor vehicle occupant injuries are the leading cause of death, causing 29 percent of all injury deaths. Suffocation is the second, followed by drowning.

## Leading Causes of Death from Injury Washington State, Ages 0-17, 1999-2001, (N=4,553,434)

Cause	Count	%	Rate per 100,000
Motor vehicle occupant injuries	192	29	4.2 (3.7 – 4.9)
Suffocation	99	15	2.2(1.8 – 2.6)
Drowning	80	12	1.8 (1.4 – 2.2)
Firearms	65	10	1.4 (1.1 – 1.8)
Pedestrian	41	6	0.9 (0.7 – 1.2)
Other injuries	177	27	3.9 (3.4 – 4.5)
<b>All Injuries</b>	<b>654</b>	<b>100</b>	<b>14.4 (13.3 – 15.5)</b>

During 1999-2001, there were 10,317 injury-related hospitalizations in Washington children 0-17 years old. Injuries due to falls were the leading cause of hospitalization. Poisoning and motor vehicle occupant injuries follow as other leading causes of hospitalization due to injury.

## Leading Causes of Hospitalization from Injury Washington State, Ages 0-17, 1999-2001, (N=4,553,434)

Cause	Count	%	Rate per 100,000
Falls	2413	23	53.0 (50.9-55.2)
Poisoning	1395	14	30.6 (29.1-32.3)
Motor vehicle occupant injuries	1064	10	23.4 (22.0-24.8)
Struck by or against an object	814	8	17.9 (16.7-19.2)
Bicycle injuries	619	6	13.6 (12.6-14.7)
Other injuries	4012	39	88.1 (85.4-90.9)
<b>All Injuries</b>	<b>10,317</b>	<b>100</b>	<b>226.6 (222.3-231.0)</b>

Most injury-related deaths (73 percent) and hospitalizations (84 percent) among Washington children 0-17 years old were unintentional. Among intentional deaths, suicide accounted for 11 percent of deaths and 10 percent of hospitalizations, and homicide accounted for 12 percent of deaths and 4 percent of hospitalizations.

### Intent of Injury Deaths and Hospitalizations Washington State, Ages 0-17, 1999-2001

Intent	Deaths		Hospitalizations	
	Count	Percent	Count	Percent
Unintentional	479	73	8,639	83
Suicide	73	11	1,005	10
Homicide	79	12	406	4
Undetermined	22	4	264	3
Legal intervention	1	0	3	0
<b>Total</b>	<b>654</b>	<b>100</b>	<b>10,317</b>	<b>100</b>

## INJURY RISK FACTORS AND DISPARITIES

The first step in injury prevention is to understand the risk factors and higher-risk groups. While every child is at risk for injury, some groups are affected more frequently. For example, nationally American Indian and Alaska Native children have disproportionately higher death rates from injury as do children in low-income families.

Factors associated with childhood injury include the youngest and oldest age groups, male gender, poverty, lack of education, substance abuse, bullying, living in a rural community, and living or working on a farm. Understanding these differences and risk factors is a first step toward eliminating disparities in injury prevalence among Washington's children.

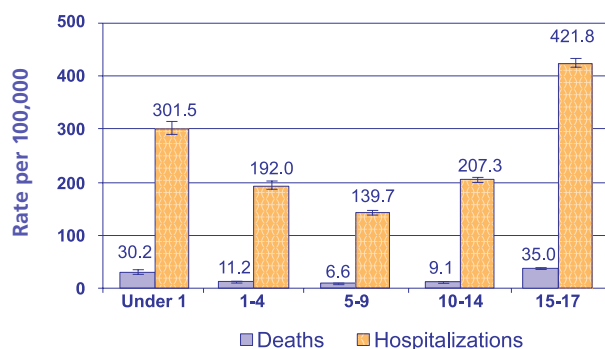
### Age Group

Children under 1 year old and adolescents 15-17 years old have the highest death and hospitalization rates among all Washington children 0-17 years old.

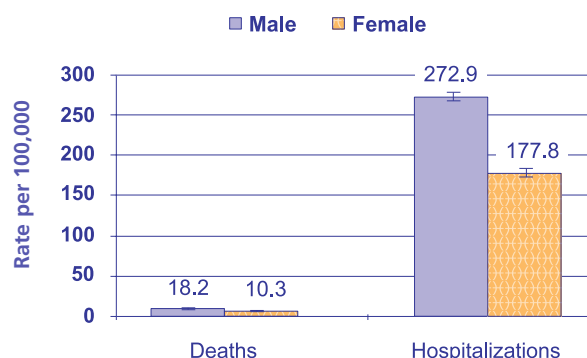
### Gender

Washington males, ages 0-17, have higher death and hospitalization rates compared to females.

**Injury Death and Hospitalization Rates by Age Group**  
Washington Children, Ages 0-17, 1999-2001



**Injury Death and Hospitalization Rates by Gender**  
Washington Children, Ages 0-17, 1999-2001



## Race and Ethnicity<sup>3,4</sup>

Washington's American Indian and Alaska Native, and African American children have significantly higher injury death rates than children in other racial groups. Injury death rates between Hispanics and non-Hispanics do not differ significantly.

**Washington Injury Death Rate  
by Race and Ethnicity, Ages 0-17, 1997-2001**

Race	Death Rate (95% CI)
White	14.3 (13.4-15.2)
African American	19.8 (15.9-24.6)
American Indian and Alaska Native	29.8 (23.0- 38.5)
Asian and Pacific Islander	10.8 (8.3-14.1)
Ethnicity	
Hispanic	15.9 (13.4-18.9)
Non-Hispanic	14.6 (13.7-15.5)

## Income and Education

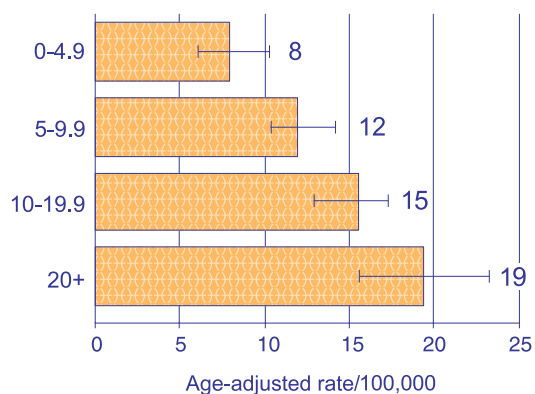
Poverty was measured as the percent of the population that was at or below the federal poverty level in the census tract<sup>5</sup> in which the child who died resided. During 1999-2001, the

child death rate from injury increased as the proportion of people living in poverty increased.

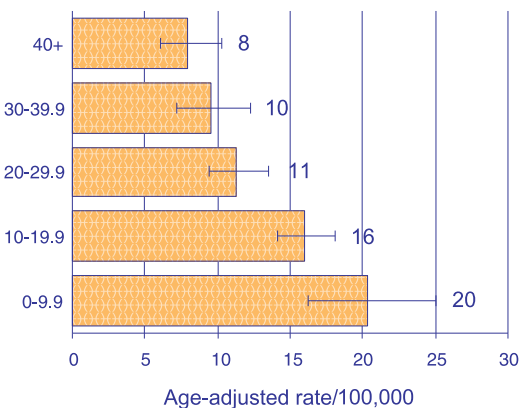
Several factors common to low-income families may increase a child's risk of injury, including single-parent households, lack of formal education, young maternal age, and multiple siblings. Children from low-income families generally live in more hazardous environments that may increase their risk of injury. Risk factors include substandard and overcrowded housing, lack of safe recreational facilities, proximity of housing to busy streets, inadequate childcare or supervision, increased exposure to physical hazards, and limited access to health care. Low-income families are less likely to use safety devices due to lack of money, lack of transportation to obtain safety devices, lack of control over housing conditions, or all of these.<sup>6</sup>

Educational level was assigned to each child who died of an injury, based on the percent of people age 25 and older with a college education in the census tract in which the child resided at death. During 1999-2001, child death rates decreased as the proportion of the population that completed college increased.

**Injury Death Rates for Children 0-17  
by Percent in Poverty  
Washington State, 1999-2001**



**Injury Death Rates for Children 0-17  
by Percent College Graduates  
Washington State, 1999-2001**



Substance Abuse

Use of alcohol and/or other drugs among supervising adults and older children plays a significant role in injuries. Nationally, alcohol is involved in about 35 percent of young adult (15-20 years old) driver fatalities. Alcohol is involved in about 40 percent of all adolescent

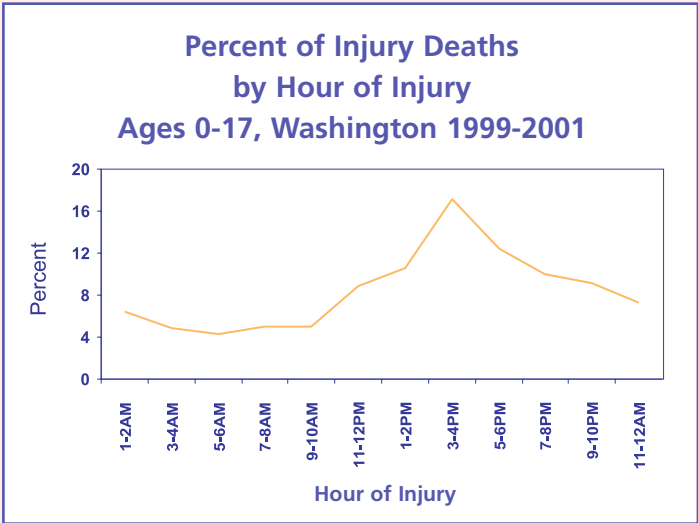
drowning deaths.<sup>7</sup> Impairment by or use of alcohol and/or other drugs was a factor in 19 percent of all the injury deaths, 33 percent of homicides, and 22 percent of suicides among Washington children 0-17 years old, as reported by local child death review teams.

Unsupervised After-school Activities

Based on data from the 2002 Healthy Youth Survey, the majority of Washington students in grades 8-12 reported they participated in supervised after school activities for 1-2 hours a week or less.

Number of Hours in Supervised After-School Activity Per Average Week Healthy Youth Survey, Washington 2002			
	Grade 8	Grade 10	Grade 12
None	40.5% (± 2.5%)	35.4% (± 2.9%)	36.7% (± 3.9%)
1-2 Hours	25.4% (± 1.8%)	20.9% (± 2.2%)	19.0% (± 1.8%)
3 or More Hours	34.1% (± 1.2%)	43.8% (± 1.6%)	44.2% (± 1.9%)

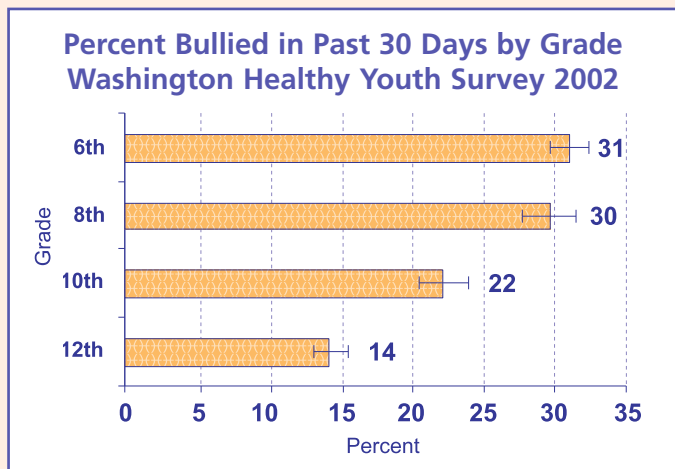
Injury deaths in Washington children peak in the late afternoon. About 40 percent of injuries leading to death occurred in the after-school and early-evening hours. There is no information on participation in supervised activities for the children that died. However, it's logical to assume that if children were in adequately supervised activities after school, they would be less likely to die from an injury.





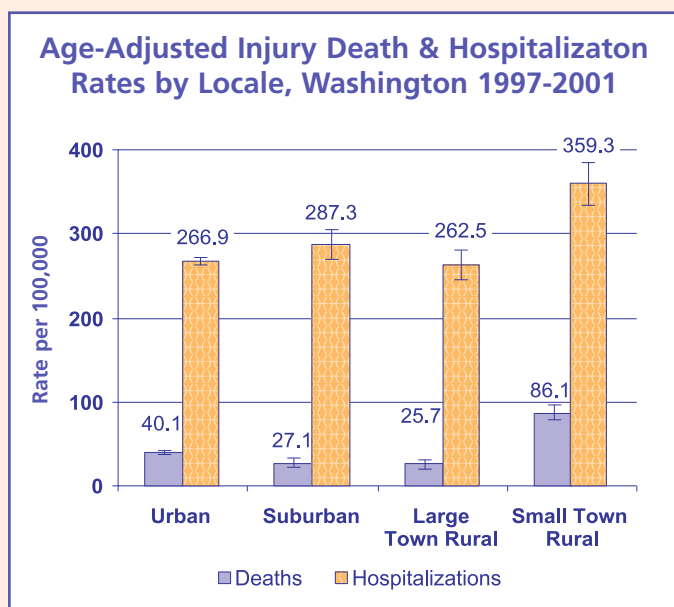
## Bullying

Bullying other children or being the target of bullies is a factor associated with youth violence.<sup>8</sup> Based on data from the 2002 Healthy Youth Survey, younger students in Washington are more likely to report being bullied in the past month than older students. For instance, about 30 percent of sixth graders report being bullied in the past month compared to about 15 percent of twelfth graders.<sup>9</sup>



## Rural and Urban Residence<sup>10</sup>

Age-adjusted<sup>11</sup> injury death and hospitalization rates are significantly higher among children who live in rural areas compared to urban areas. These differences may be partially explained by delayed pre-hospital care, severity of injuries received, longer motor vehicle distance traveled, higher motor vehicle speeds, and less seat belt use in rural areas. Differences in injury rates between rural and urban Washingtonians may reflect underlying differences in demographics.<sup>12</sup> For example, lower education attainment and incomes are risk factors for increased injury death rates. The residents of rural Washington generally have lower incomes and have completed fewer years of formal education than those in other areas.



## Living or Working On a Farm

Farming is one of the most dangerous industries in the United States. Each year, approximately 100,000 children under 20 years of age are injured on farms and more than 100 are killed. Approximately 1.5 million children under the age of 20 live, work, or have a regular presence on farms. Included in this total are children of farm families, farm workers, and migrant and seasonal workers. These children are exposed daily to many farm hazards including tractors, farm machinery, pesticides, and livestock.<sup>13</sup>

In Washington during 1997- 2001, injury data indicate that agricultural machinery was responsible for three deaths and 14 hospitalizations for Washington children 0-17 years old. However, these numbers are likely to be an underestimate of the magnitude of the problem, as only injuries coded as agricultural machinery are counted. Because of the lack of data on agricultural injuries among Washington children, a chapter is not devoted to this topic. Also, because of the small number of injuries attributed to farming, the elevated injury death and hospitalization rates in rural areas are unlikely to be due to farming.

## Reducing Injury in High-Risk Groups

The second step in injury prevention is to implement prevention strategies that have been identified as best practices and to target high-risk groups and behaviors where appropriate. Strategies vary depending on the injury mechanism and intent, and can also be population or target audience specific. An example would be drowning, where the prevention strategies will be very different for public pools than they will be for beaches or for boating.

Our intent in providing these strategies is to assist communities and organizations by identifying those that have the most promise in being effective. After reviewing the strategies, communities may need assistance developing a plan and implementing the strategy most suited to their need. The Injury Prevention Program staff is available to provide assistance as needed.

<sup>1</sup> Injuries in this report are classified using a framework recommended by the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (see Appendix C for details). Categories are assigned using the ICD-9 and ICD-10 E-code (external cause of injury) for each event. Injuries are classified along two dimensions, cause and intent (unintentional, self-inflicted, homicide, undetermined, and legal intervention or war). Hospitalizations are non-fatal hospitalizations.

<sup>2</sup> The estimate of the number of injuries that result in a call to a doctor's office comes from data from LA Fingerhut and M Warner. Injury Chartbook in Health, United States, 1996 – 1997, p18, 1997, National Center for Health Statistics, U.S. Public Health Service: [http://www.cdc.gov/nchs/data/hsr/hsr96\\_97.pdf](http://www.cdc.gov/nchs/data/hsr/hsr96_97.pdf)

<sup>3</sup> Race can be viewed as a proxy for the effects of complex social, cultural, economic, and political factors on human health. For example, good birth outcomes among Mexican-American women are thought to be related to socio-cultural practices supportive of healthy lifestyle choices during pregnancy. Discrimination and racism may affect the quality of medical care, leading to poorer health outcomes among African Americans. Additionally, sometimes race serves as a marker for socioeconomic status. For example, in some areas people of certain racial and ethnic groups may, as a group, have fewer material resources than other groups. Differences in health status caused by lack of access to material goods may appear as differences in health status among racial and ethnic groups, although the root cause is not race or ethnicity.

<sup>4</sup> Guidelines for Using Racial and Ethnic Groups in Data Analyses, Washington State Department of Health, July 2003: [www.doh.wa.gov/Data/Guidelines/Raceguide1.htm](http://www.doh.wa.gov/Data/Guidelines/Raceguide1.htm)

<sup>5</sup> Census tracts are small geographic areas within counties. They generally have between 2,500 and 8,000 residents.

<sup>6</sup> National SAFE KIDS Campaign (NSKC). Children at Risk Fact Sheet. Washington (DC): NSKC, 2004: [www.safekids.org/tier3\\_cd.cfm?folder\\_id=540&content\\_item\\_id=1031](http://www.safekids.org/tier3_cd.cfm?folder_id=540&content_item_id=1031).

<sup>7</sup> Centers for Disease Prevention and Control, National Center for Injury Prevention and Control, Impaired Violence and Facts on Adolescent Injury Fact Sheets: [www.cdc.gov/ncipc/factsheets/driving.htm](http://www.cdc.gov/ncipc/factsheets/driving.htm) and [www.cdc.gov/ncipc/factsheets/adoles.htm](http://www.cdc.gov/ncipc/factsheets/adoles.htm)

<sup>8</sup> Centers for Disease Prevention and Control, National Center for Injury Prevention and Control, Youth Violence Fact Sheet: [www.cdc.gov/ncipc/factsheets/yvfacts.htm](http://www.cdc.gov/ncipc/factsheets/yvfacts.htm)

<sup>9</sup> The bullying question on the Healthy Youth Survey defines bullied as "a student is being bullied when another student, or group of students, say or do nasty or unpleasant things to him or her. It is also bullying when a student is teased repeatedly in a way he or she doesn't like. It is NOT bullying when two students of about the same strength quarrel or fight."

<sup>10</sup> Data in this report are not broken down by cause and county because of small numbers. The overall numbers of deaths and injury deaths to Washington children by county are provided in Appendix C. More county-specific injury data is available at the Washington State Department of Health Injury Prevention Program website at: [www.doh.wa.gov/cfh/Injury/Tables\\_update.htm](http://www.doh.wa.gov/cfh/Injury/Tables_update.htm).

<sup>11</sup> See Specific Rates section in Appendix A for discussion of age-adjustment.

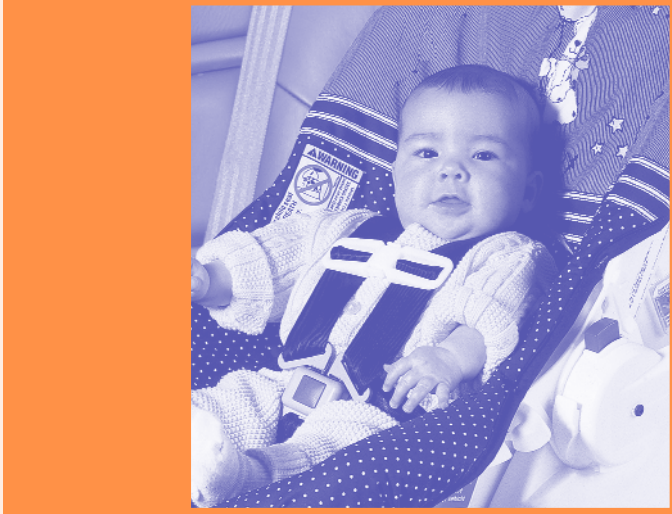
<sup>12</sup> For more information on rural and urban residence disparities, see Office of Community and Rural Health, Washington State Department of Health: [www.doh.wa.gov/hsqa/ocrh/har/hcresrch.htm](http://www.doh.wa.gov/hsqa/ocrh/har/hcresrch.htm)

<sup>13</sup> Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Childhood Agricultural Injury Prevention Initiative: [www.cdc.gov/niosh/childag/](http://www.cdc.gov/niosh/childag/)

# *INJURY BY CAUSE*



# MOTOR VEHICLE OCCUPANT INJURY<sup>1</sup>



## Summary

Motor vehicle crashes are the most frequent cause of injury death for Washington children 0-17 years old. Teens ages 15-17 had the highest rate of motor vehicle occupant deaths and hospitalizations. Motor vehicle occupant hospitalizations were more likely to occur to children in rural areas. About 45 percent of the Washington children who died were unrestrained by a child safety seat or seatbelt at the time of their death. Forty-three percent of deaths occurred in the evening between 5 p.m. and 12 midnight.

Motor vehicle occupant injuries can be prevented by increasing the availability of child safety seats and education to parents, enforcing the graduated licensing law for teen drivers, and enforcing seat belt and child safety seat laws for vehicle occupants.

## REAL STORIES OF MOTOR VEHICLE CRASHES INVOLVING WASHINGTON CHILDREN

*Leslie, age 10, and Beth, 9 months old, were riding with their parents in a pickup truck. The truck hit a patch of ice, spun out of control, and rolled over numerous times. Beth was in a car seat and the rest of the family had their seat belts on. Despite, the damage to the truck, the whole family came away from the crash without a scratch.*

*Sarah, age 3, was riding in a car driven by her parent. She was in the back seat, but not in a car seat. The car was hit by another car, driven by a young adult drag racing on a public road. Sarah died in the crash.*

*Andrew, age 17, was under the influence of alcohol, speeding, and not paying attention to his driving because of the two other teens in the car. The car hit a barrier, ran off the road and overturned. One of the passengers was wearing a seatbelt, and was not injured. The driver and other passenger, who were not wearing seatbelts, were ejected from the car and died.*

<sup>1</sup> Injuries to occupants of motor vehicles including automobiles, vans, trucks, motorcycles, and other motorized cycles known or assumed to be traveling on public roads or highways.

- Children under 8 years old or whose height is less than 4'9" must use an appropriately sized child safety seat. An expert should check the safety seat for proper installation. **All children ages 12 and under should ride in the back seat. Children must use safety restraints on every ride.**
  - Infants should ride in rear-facing child safety seats until they are at least 1 year old and at least 20 pounds. Never place a rear-facing infant in the front seat of a car equipped with an active airbag. Parents who are expecting a newborn infant should watch for infant car seat sales throughout the pregnancy.
  - Children ages 1-4 weighing between 20 and 40 pounds can ride in forward-facing child safety seats. For optimal protection, children should remain in rear-facing convertible seats until reaching the maximum weight for the car safety seat, as long as the top of the head is below the top of the seat back. Many convertible seats have maximum weights of 30 pounds.
  - Children ages 4-8 weighing more than 40 pounds should ride in booster seats – always used in conjunction with a lap and shoulder belt.
  - Children over 8 years old or 4'9" tall should use an appropriately fitting, properly worn lap and shoulder belt. The lap portion should be worn snug and low on the hips, touching the top of the thighs; the shoulder portion should cross the center of the chest and shoulder.
- For teens:
  - Parents should know the rules of Washington's graduated driver licensing system and enforce them with their teen drivers.
  - Teens should follow the rules set by the graduated drivers license system. This means they can obtain an Intermediate Driver License at 16 years of age. The intermediate license has certain limitations that must be followed during the first year, including:
    - No driving between 1 a.m. and 5 a.m., unless accompanied by parent, guardian, or licensed driver at least 25 years old. All nighttime driving is far riskier for newly licensed teens than for experienced drivers.
    - For the first six months, no passengers under age 20, except family members.
    - For the second six months, no more than three passengers under age 20.
  - Teens should correctly wear a seatbelt every time they are riding or driving in a vehicle.
  - Encourage teens never to drive impaired.
- Parents should model seatbelt use, drive at posted speed limits, avoid distractions like eating or using cell phone while driving, and demonstrate safe, sober driving behaviors.



- Support law enforcement of speed limits.
- Enforce the primary seat belt law, which allows police officers to stop vehicles with unbelted occupants of any age (RCW 46.61.688).
- Increase enforcement at specific locations and times to target violations of safety belt laws.
- Plan, implement, and evaluate media campaigns that publicize the enforcement activity.
- Support enforcement of the primary child safety seat law, which allows police officers to stop vehicles for failing to properly restrain children less than 6 years old (RCW 46.61.687).
- Provide education along with approved child safety seats and booster seats to low-income parents through purchase based on a sliding scale, giveaways, or short-term loans.
- Increase the availability and accessibility of child safety and booster seats.
- Use special enforcement strategies (e.g. checkpoints when possible, dedicated law enforcement programs, or alternative penalties) to enforce existing child safety seat laws.
- Implement community-based child passenger safety programs. For example, use media support, child safety seat check stations and child safety seat displays in public places to promote use.
- Enhance the availability and accessibility of trained child passenger technicians, who can inspect the installation of child safety and booster seats.
- Support enforcement of Washington's graduated driving license law (RCW 46.20.075).
- Support enforcement of the underage impaired driving law, which penalizes drivers younger than 21 with a blood alcohol content (BAC) of .02 or higher (RCW 46.61.503).
- Emphasize increasing seat belt usage in rural communities through enhanced enforcement programs and media campaigns that publicize the enhanced enforcement.
- Enhance availability of emergency medical services in rural areas.



## Number of Injuries<sup>2</sup>

During 1999-2001, motor vehicle crashes were the most common cause of injury death and hospitalization for Washington children 0-17 years old. Motor vehicle occupant injuries among Washington children 0-17 years old account for an annual average of:

- 64 deaths.
- 355 hospitalizations hospitalizations.
- An estimated 10,600 visits to a hospital emergency department.

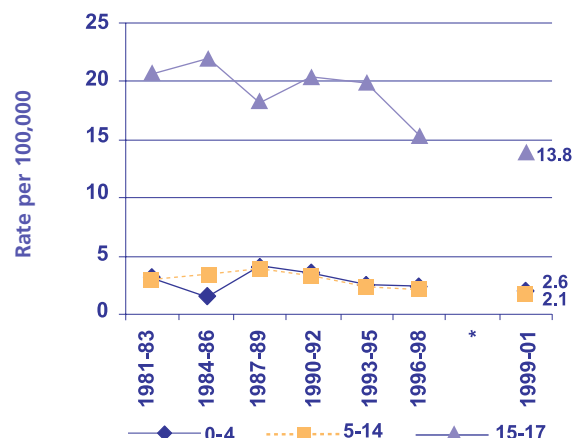
## Time Trends<sup>3</sup>

From the three-year time period of 1981-83 to 1999-2001, there was a statistically significant decline in the motor vehicle crash death rate for Washington children from 5.8 to 4.2 per 100,000. This represents about a 28 percent decrease in the motor vehicle crash death rate.

Motor vehicle occupant death rates in Washington were similar to national rates<sup>4</sup> during 1990-1998. However, during 1999-2001 Washington rates were higher than national rates.

The 15- through 17-year-old group was the only age category that showed a statistically significant decline.

**Motor Vehicle Occupant Death Rates by Age  
Ages 0-17, Washington 1981-2001**

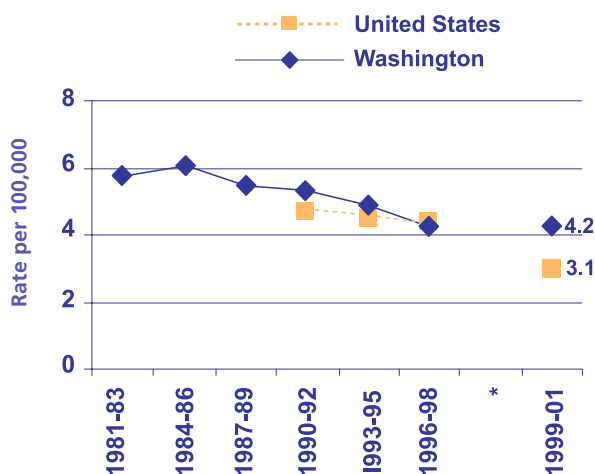


\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

## Intent

All Washington motor vehicle occupant deaths and hospitalizations were classified as unintentional.

**Motor Vehicle Occupant Death Rates  
Ages 0-17, Washington 1981-2001  
United States 1990-2001**



\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

<sup>2</sup> Unless otherwise specified, data are for motor vehicle occupant injuries among children 0-17 years old during 1999-2001, except in the urban and rural section, which are for 1997-2001. Rates are per 100,000 children who are Washington residents.

<sup>3</sup> See Comparability Ratio section in Appendix D.

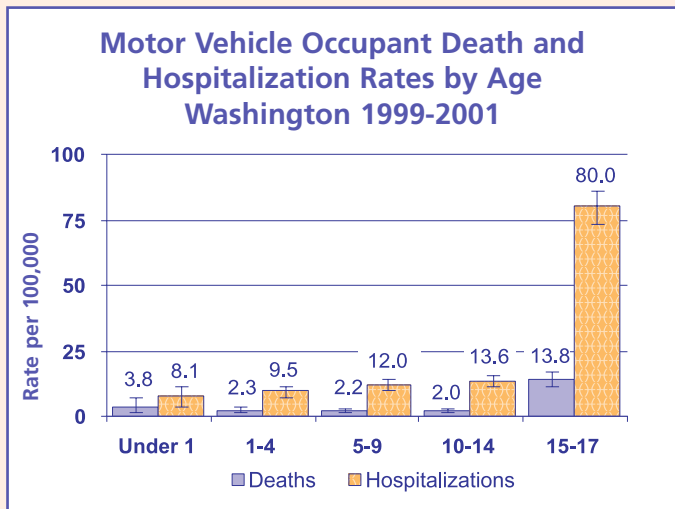
<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

## Age and Gender

The 15-17 age group had the highest rate of deaths and hospitalizations.

Males 15-17 years old had a death rate 1.5 times higher, and a hospitalization rate 20 percent higher than females.

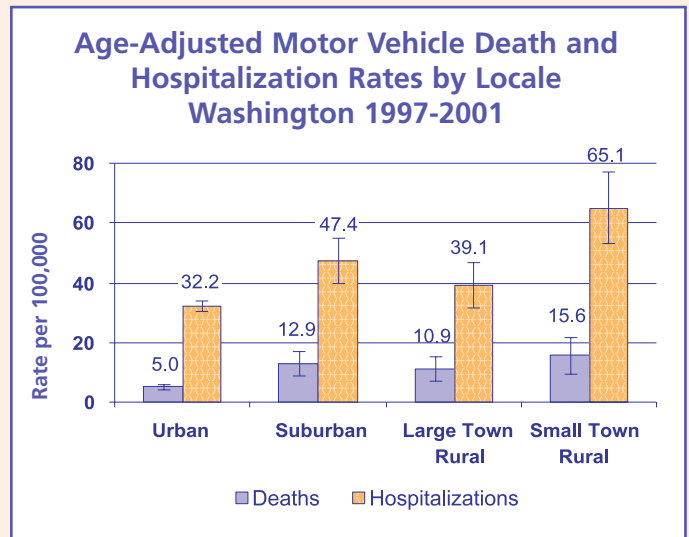
Data from Washington's Fatal Accident Reporting System (FARS) show that drivers ages 15-20 were more likely to be speeding, overcorrect, drive in a reckless or negligent manner, drive inattentively or distractedly, disobey signs, signals, or officers, and engage in improper passing compared to drivers over 21 years old.



## Urban and Rural

Age-adjusted<sup>5</sup> motor vehicle occupant death and hospitalization rates were lowest for Washington children in urban core areas and highest in rural small towns.

Data from Washington's FARS show lower safety restraint use among children who are killed in a motor vehicle crash in rural parts of the state compared to urban areas. Higher injury rates in rural areas may also reflect relatively poorer driving conditions (e.g., less road maintenance, higher motor vehicle speeds, less seat belt use, smaller roads, and no physical barriers between opposing traffic flows), greater severity of injury, and delayed pre-hospital care.



## Collisions Per Vehicle Miles Traveled

Data from the Washington Traffic Safety Commission show that Washington teen drivers (15-17 years old) are at higher risk of being in a collision, even after adjusting for the number of miles traveled in a vehicle.

<sup>5</sup> See Specific Rates section in Appendix A for discussion of age-adjustment.

## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

Local child death review teams reviewed 141 out of the 192 motor vehicle occupant deaths during 1999-2001. Key findings include:

- Driver error (57 percent) and excess speed (45 percent) were the most common contributing factors.
- In seventy-three (52 percent) of the 141 deaths, the driver was less than 20 years old.
- Impairment by or use of alcohol and/or other drugs was a factor in 42 (30 percent) of the deaths reviewed. The youth was impaired in 14 of the deaths, the supervising adult in nine, the driver of the other vehicle in 18, and other passengers in four.<sup>6</sup>
- Sixty-four (45 percent) were unrestrained at the time of their death.
- Of the 22 children 4-8 years old who died, only one (5 percent) was in a booster seat.
- An airbag contributed to three deaths (2 percent), two were children less than 13 years old.
- Sixty-one (43 percent) occurred between 5 p.m. and 12 midnight.
- Teams concluded that 87 percent of the 141 motor vehicle occupant deaths were preventable, 7 percent were not preventable, and the teams were unable to determine preventability for 6 percent.

Seventy-eight of the 141 child deaths of motor vehicle occupants were teens (15-17 years old). Key findings specific to teens include:

- A teen (15-17 years old) was driving in 48 (62 percent) of the teen deaths.
- Of the 48 teen deaths where a teen was driving, 25 (52 percent) had at least one other teen in the car.
- Forty (51 percent) of teens were not wearing a seatbelt at the time of their death. For 15 (19 percent), there was no information available about their use of a seatbelt for local team review.
- Impairment by or use of alcohol and/or other drugs was a factor in 31 (40 percent) of the teen deaths. The youth was the one impaired in 13 of the deaths, the supervising adult in four, the driver of the other vehicle in 14, and other passengers in one.<sup>6</sup>
- Thirty-three of the 78 teen deaths (42 percent) occurred between 5 p.m. and 12 midnight.

<sup>6</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

# SUFFOCATION



## Summary<sup>1</sup>

Suffocation is the second leading cause of injury death for Washington children 0-17 years old. Suffocation death rates were highest in two subgroups of children younger than 18: 0-4 years old and 15-17 years old. Suffocation was more common among males than females, especially for males 15-17 years old. The majority of suffocation deaths among Washington infants occurred while co-sleeping with a parent or sibling. The majority of suffocation deaths among Washington children 15-17 years old were caused by self-inflicted strangulation from hanging.

Suffocation injuries can be prevented by putting infants to sleep in an appropriate crib environment, supervising infants while eating, ensuring children play with age-appropriate toys, and promoting caregiver awareness of suffocation risk for young children. For suicide prevention strategies, see the Suicide chapter.

## REAL STORIES OF SUFFOCATION INVOLVING WASHINGTON CHILDREN

*Emily, 3 months old, died of positional asphyxia after she became wedged between the mattress and wall. She was co-sleeping on a queen size bed with her parents who had been drinking alcohol and smoking marijuana earlier that night.*

*Jocelyn, 9 months old, died after her portable crib collapsed on top of her. The crib was handed down to the family by friends, and unknown to the family, had been recalled by the U. S. Consumer Product Safety Commission several years earlier.*

*Adam, age 6, was pretending he was an animal with a leash around its neck; he slipped and hung himself from the top bunk of his bed with the sash of a robe.*

<sup>1</sup> Suffocation is defined as death due to oxygen deprivation from mechanical causes. There are two major ways in which suffocation causes deaths: (1) by the inhalation or ingestion of food or other objects that block respiration and (2) by other mechanical

mean that hinder breathing (e.g., plastic bag over nose or mouth, suffocation by bedding, and unintentional or intentional hanging or strangulation).

- Place infants to sleep on their backs on a firm, flat, tight-fitting crib mattress in a crib that meets national safety standards. Remove pillows, comforters, toys, and other soft products from the crib. Consider using a sleeper instead of a blanket. If a blanket is used, tuck the blanket around the crib mattress, covering baby only as high as his/her chest. A fitted bottom sheet specifically made for a crib should be used. Nothing should hang above a crib with string or ribbon that is longer than seven inches.
- If parents choose to co-sleep with their infant, they should not co-sleep with their infant on a couch, or after using alcohol or other drugs. The Consumer Product Safety Commission and the Academy of Pediatrics do not recommend co-sleeping with an infant.
- Check for recalled cribs, playpens, high chairs, changing tables, strollers, and other nursery products! Visit the Consumer Product Safety Commission's website ([www.cpsc.gov](http://www.cpsc.gov)) to check for recalled products and learn how to repair or replace the recalled item.
- Always supervise young children while they are eating or playing. Avoid giving infants round or hard foods to eat like nuts, raw carrots, popcorn, seeds, or hard candy. Hot dogs and grapes are okay if the skin is removed and the food is chopped into small, non-round pieces. Small items such as coins, safety pins, jewelry and buttons should be kept out of children's reach. Learn First Aid and CPR.
- Use the "toilet paper roll rule": toys or items that fit through a cardboard toilet paper roll are too small for young children. Ensure that children play with age-appropriate toys according to safety labels. Inspect old and new toys regularly for damage. Make any necessary repairs or discard damaged toys.
- Remove hood and neck drawstrings from all children's outerwear, such as jackets and sweatshirts. To prevent strangulation, never allow children to wear necklaces, purses, scarves, or clothing with drawstrings while on playgrounds.
- Tie up all window blind and drapery cords or cut the ends and retrofit with safety tassels.
- Keep plastic shopping, garbage, and dry cleaning bags away from babies and children. Never use a plastic shopping bag or other plastic film as a mattress cover.
- **See the Suicide chapter for suicide prevention strategies.**

## PREVENTION STRATEGIES FOR COMMUNITIES

## SUFFOCATION

- Educate families about suffocation hazards and recalled products.
- Arrange for a speaker from the Red Cross, fire department, emergency medical service, or hospital to teach parents CPR and/or the Heimlich maneuver.
- Conduct a "recall roundup" to check for recalled items at secondhand and thrift stores, and childcare centers. Watch for toys that could be choking hazards, especially for infants and toddlers (your local Consumer Product Safety Commission office can help with this).
- Check to make sure that the school cafeteria takes into account choking hazards when deciding on school lunch menu items, especially for younger students.
- Make sure that playground equipment is free of suffocation and strangulation hazards.
- **Support suicide prevention programs (see Suicide chapter).**

## Number of Injuries<sup>2</sup>

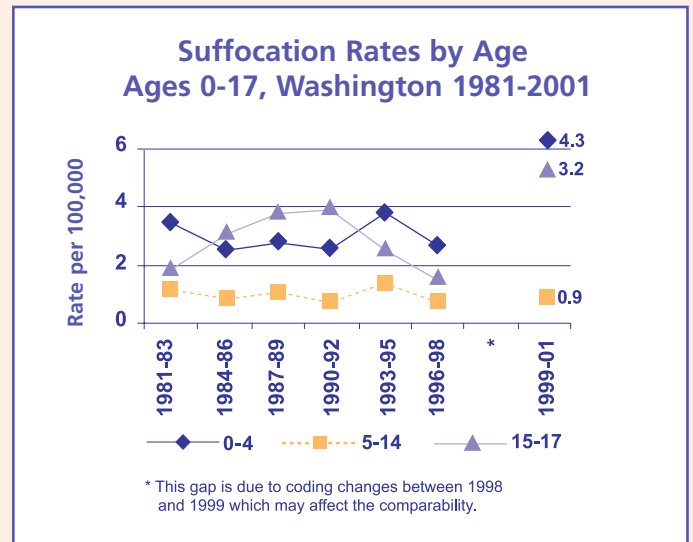
During 1999-2001, suffocation was the second leading cause of injury death for Washington children 0-17 years old. Suffocation injuries to Washington children 0-17 years old account for an annual average of:

- 33 deaths.
- 63 hospitalizations.
- About 420 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

There was no change in the suffocation death rates for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001.

Suffocation rates among Washington children have been similar to national rates since 1990<sup>4</sup>.



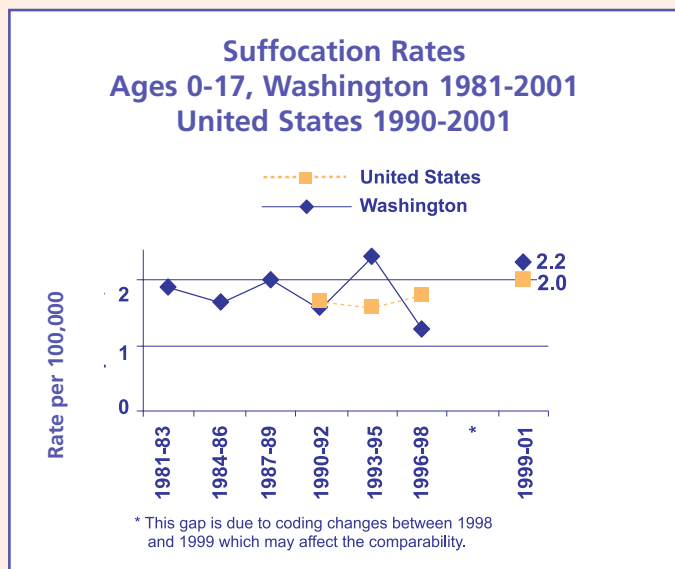
## Intent

For Washington children 0-14 years old, the majority of suffocation deaths (75 percent) and hospitalizations (96 percent) were unintentional.

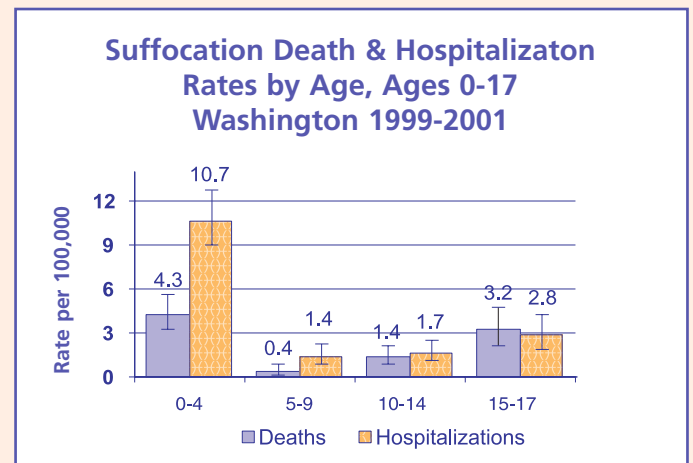
For teens (15-17 years old), the majority of suffocation deaths (80 percent) and many hospitalizations (50 percent) were self-inflicted injuries.

## Age and Gender

The highest suffocation rates for Washington children were among those 0-4 and 15-17 years old. The suffocation hospitalization rate was highest for those 0-4 years old.



From the three-year time period of 1981-83 to 1999-2001, there has been no change in suffocation death rates in any of the age groups (0-4, 5-14, and 15-17).



Males had a suffocation death rate that was two times higher than females; males 15-17 years old had a suffocation death rate that was five times higher than females. There was no statistically significant difference in hospitalization rates between males and females.

<sup>2</sup> Unless otherwise specified, data are for suffocation injuries among children 0-17 years old during 1999-2001. Rates are per 100,000 children who are Washington residents.

<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.



Local child death review teams reviewed 81 out of the 99 suffocation deaths during 1999-2001. Key findings include:

- Deaths in infants were more likely to be unintentional, while deaths among teens were more likely to be self-inflicted.
- Teams concluded that 70 percent of the 81 suffocation deaths were preventable, 14 percent were not preventable, and the teams were unable to determine preventability for 16 percent of the deaths.

### Infants

- Twenty-four (86 percent) of the infant suffocation deaths were unintentional, two (7 percent) were homicides, and two (7 percent) were of undetermined intent.
- The suffocation deaths of infants most commonly occurred while sleeping. Infants suffocated by either being wedged between the bed and a wall or pillow, or parental overlay.
- Of the 22 infants who died of suffocation while sleeping, 20 (91 percent) were co-sleeping with a parent or sibling at the time of their death. Fifteen of these deaths were due to overlay by an adult or sibling.
- Twelve of the 20 co-sleeping infants (60 percent) had at least one of these risk factors<sup>5</sup>: co-sleeping on a couch (seven of the deaths) and/or alcohol and/or other drug use by the parent (six of the deaths).
- A recalled playpen contributed to one infant death.
- Impairment by or use of alcohol and/or other drugs was noted in nine of the 28 infant deaths (32 percent). The supervisor was impaired in eight deaths and the infant was impaired in one death.<sup>6</sup>

### Children 1-14 years old

- Twenty-one (70 percent) of the 30 suffocation deaths reviewed for children ages 1-14 were unintentional, six (20 percent) were suicides, one (3 percent) was a homicide, and two (7 percent) were of undetermined intent.
- The most common causes of unintentional suffocation in this age group were hanging and choking, either on food or a foreign body.
- Product safety was associated with three deaths. The products include a car window, recalled playpen, and beanbag chair with a zipper.
- One suffocation death in this age group was related to sexual hanging.
- One death occurred while sleeping due to parental overlay.
- Impairment by or use of alcohol and/or other drugs was noted in three of the 30 deaths (10 percent) to children ages 1-14. The child was impaired in all three deaths.<sup>6</sup>

### Teens

- Local teams reviewed 23 suffocation deaths for youth ages 15-17. The majority (74 percent) of these deaths were suicide by hanging. One death (4 percent) was unintentional, one (4 percent) was a homicide, and three (13 percent) were of undetermined intent.
- Two of the suffocation deaths were related to drug use with plastic bags.
- One suffocation death in this age group was related to sexual hanging.
- Impairment by or use of alcohol and/or other drugs was noted in five teen deaths (22 percent). The youth was the one impaired in all five of the deaths<sup>6</sup>.

<sup>5</sup> Death may have had more than one risk factor.

<sup>6</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

# DROWNING



## Summary

Drowning<sup>1</sup> is the second leading cause of injury death for Washington children ages 1-17. Drowning death rates are highest in two subgroups of children younger than 18: children 0-4 years old, and adolescents 15-17 years old. Drowning is more common among males than females. The majority of drowning deaths in Washington occur in open water (a lake, river, pond, creek, or ocean waters).

Drowning prevention strategies include caregiver supervision, enforcement of regulations requiring life jackets for children on boats, pool fencing and barriers, swimming lessons that include open water instruction, the use of certified lifeguards in public swim areas, and education and awareness programs for children and adults.

## REAL STORIES OF HOW WASHINGTON CHILDREN DROWNED

*Billie, age 4, went to the park with his 10-year-old sister. He ran off to play and was later found in a nearby creek.*

*Kevin, age 17, was swimming with friends at the lake. He was unable to make it to land and his friends could not reach him in time to help.*

*Philip, age 9, was fishing with his brother in a raft. He fell out of the raft without a life jacket and could not be rescued.*

*Rachel, age 3, was playing in the neighbor's yard while her father visited. Rachel wandered off and was found a few minutes later in the bottom of the neighbor's pool, which was not fenced on all sides.*

## REAL STORIES OF HOW WASHINGTON DROWNINGS WERE PREVENTED

*About two months after the life jacket loaner program had been in place at Black Lake in Tumwater, a paddleboat operated by two brothers, aged 9 and 11, and their 11-year-old friend, was flipped over by the wake of a motorboat. Fully clothed, the boys had trouble swimming and the shock of suddenly being in the cold water stunned them. They might have been drowning casualties except for the life jackets from the loan station that each boy wore.*

<sup>1</sup> Drowning is a death from a submersion event either with or without involvement of a watercraft. A drowning hospitalization is that which occurs after surviving such an event.

- Supervise children at all times when around water (pools, open water, bath tubs, toilets, hot tubs, garden ponds, and five-gallon buckets). Supervising around water means that the supervisor is focused on the children at all times, is sober, can rescue the children, knows where the nearest phone is, and is within an arm's reach or close enough to provide immediate rescue.
- Wear life jackets as models for children and be prepared in the event of an emergency. Have children wear appropriately sized life jackets while they are on a dock, boat, raft, and inner tube, or around open water.
- Learn CPR and practice what to do in an emergency.
- Teach children how to be safe around water. Insist on adult supervision. Make sure they learn to swim and can tread water for at least 10 minutes. Teach children about swimming in open water, and know what to do in case of emergency. Be aware that swimming lessons and swimming ability do not provide "drown proofing" for children or adults.
- The mixture of alcohol and/or other drugs and water recreation can be lethal. Set firm water safety rules with clear consequences if a child uses alcohol or other drugs around water. Parents should model the avoidance of using alcohol while around water.
- Swim in designated swim areas in the presence of certified lifeguards, if possible.
- Establish water safety guidelines for teens. Warn of risks of cold water, swimming away from shore, and water with currents. Insist on life jacket use when in boats, on rafts, or while swimming in open water. Provide swimming lessons if needed.

*PREVENTION STRATEGIES FOR COMMUNITIES**DROWNING*

- Encourage policies and regulations to address safety needs at beaches, residential pools, and while boating:
  - Enforce regulations requiring life jackets for children on boats.
  - Encourage boating safety courses.
  - Enforce laws that prohibit alcohol and other drug consumption by adolescents and boat operators.
- Encourage adoption of the National Uniform Building Code standard that requires four-sided fencing and other adequate barriers around private pools.
- Promote lifeguard availability and training programs for people who supervise children around water.
- Start a life jacket loan program in your community. Encourage public pools and beaches to have policies that allow children to wear life jackets, at least during family swim times.
- Provide survival strategies for open water and teach life jacket use as part of swimming lessons. Swimming lessons should be developed specifically for teens and culturally tailored for specific populations. Parent education should be added focusing on supervision, as well as safety issues for open water and life jacket use.
- Begin drowning prevention campaigns in April/May and run through the summer.
- Work with health care providers to counsel parents, children and teens about drowning risks and prevention.

## Number of Injuries<sup>2</sup>

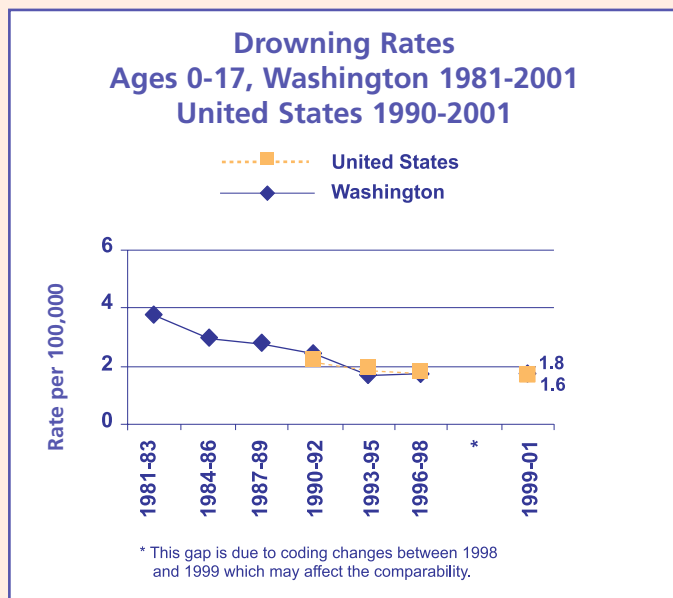
During 1999-2001, drowning was the second leading cause of injury death for Washington children 1-17 years old. Drowning injuries among Washington children 0-17 years old account for an annual average of:

- 27 deaths.
- 30 hospitalizations.
- About 110 visits to a hospital emergency department.

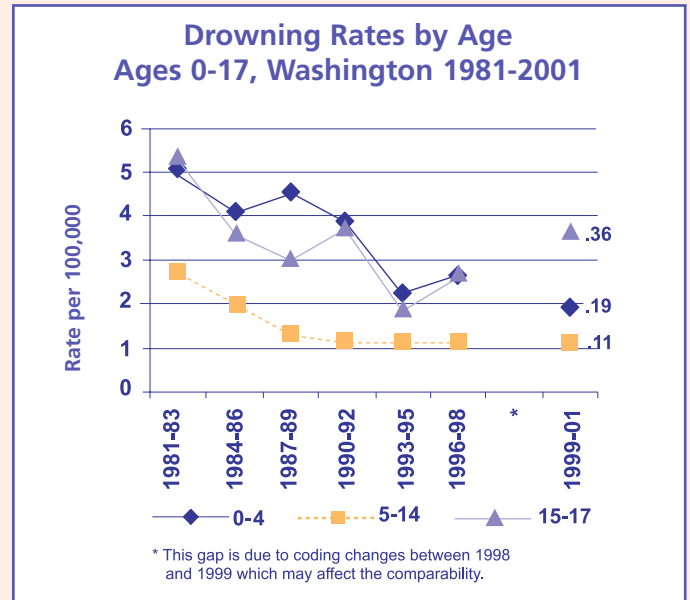
## Time Trends<sup>3</sup>

From the three-year time period of 1981-83 to 1999-2001, there was a statistically significant decline in the drowning death rate for Washington children 0-17 years old, from 3.8 to 1.8 per 100,000. This represents about a 54 percent decrease in the drowning rate.

Drowning death rates in Washington have been similar to national rates since 1990.<sup>4</sup>



Both the 0-4 and 5-14 age groups showed a statistically significant decline in drowning deaths. There has been a significant increase in teen (15-17 years old) drowning deaths during 1993-2001.



## Intent

The vast majority of drownings resulting in death (95 percent) and hospitalization (98 percent) were unintentional.

<sup>2</sup> Unless otherwise specified, data are for drowning injuries among children 0-17 years old during 1999-2001, except in the age and gender section, which are for 1997-2001. Rates are per 100,000 children who are Washington residents.

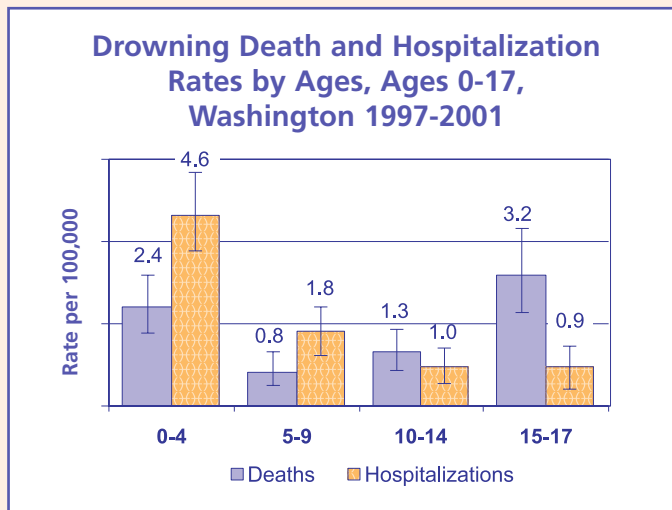
<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

## Age and Gender

During 1997-2001, the highest drowning death rates were among those 0-4 and 15-17 years old.

Males had a drowning death rate that was four times higher than females. Males 15-17 years old had a drowning death rate that was eight times higher than females the same age.

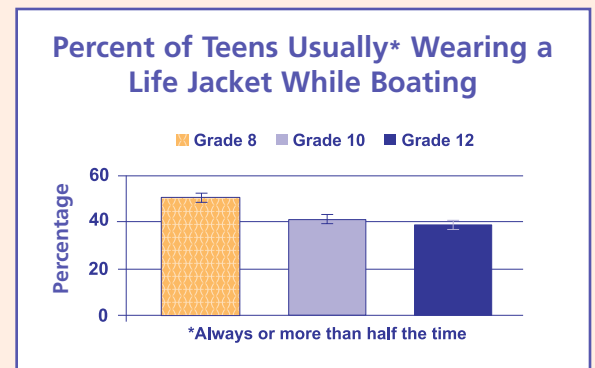


The drowning hospitalization rate was highest for those 0-4 years old. Males, 0-17 years old, had a hospitalization rate for drowning that was two times higher than females.

## Life Jacket Usage

Data from the 2002 Healthy Youth Survey show that about 50 percent of eighth graders report wearing a life jacket more than half the time while boating. By twelfth grade, about only four out of ten reports wearing a life jacket while boating.

Data from an observational study in 2000 of Washington children 0-14 years old showed that 1,106 out of 1,505 (about 77 percent) of children were wearing a life jacket while boating.



## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

Local child death review teams reviewed 72 of the 80 drowning deaths during 1999-2001. Key findings include:

- The majority (71 percent) of drowning deaths occurred in open water (a lake, river, pond, creek, or ocean waters).
- Thirty-one (43 percent) of the children were swimming, playing in the water, or on a rubber raft or inner tube in open water or a pool just prior to the drowning. Eighteen (25 percent) were playing or sitting near the water while six (8 percent) were boating. Eight children (11 percent) drowned in a bathtub.
- Infants were most likely to drown in a bathtub.
- Children 1-4 years old most often drowned in open water, although most of the swimming pool deaths occurred in this age group.
- None of the pools or hot tubs where a child drowned had a locked gate.
- A lifeguard was present in only three (5 percent) of the 58 drowning deaths that occurred in open water or a pool.
- Only two children (3 percent) were known to be wearing a life jacket: one was wearing a life jacket that was too big for him/her, and one was wearing a life jacket, but was pulled under the water while holding on to a rope. None of the six children boating had on a life jacket.
- Signs warning of hazards were posted in eight (14 percent) of the 58 drowning deaths that occurred in open water or a pool.
- Impairment by or use of alcohol and/or other drugs was a factor in seven (10 percent) of the deaths. The youth was the one impaired in six of the deaths, the supervising adult in one, and another individual in one<sup>5</sup>.
- The review teams had access to information about the children's swimming ability for 44 of the children: 22 of the children could swim, while 22 could not.
- Teams concluded that 81 percent of the 72 drowning deaths were preventable, 15 percent were not preventable, and the review teams were unable to determine preventability for 4 percent.

<sup>5</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.





## Summary

Firearm<sup>1</sup> injuries are the third leading cause of injury death for Washington children 10-17 years old. Firearm injury rates were highest among males 15-17 years old. Most (91 percent) of the firearm deaths among Washington children were intentional. The majority (73 percent) of all the deaths occurred in the home of the child, a friend, or a relative. Firearms used in most of the child deaths in Washington State were not stored safely. About one quarter of twelfth graders surveyed reported that it was easy to get access to a handgun.

Restricting access to guns by children is paramount. Promoting proper gun storage practices and creating community coalitions to develop, implement, and monitor a local plan to reduce the number of locations in which youth have access to guns are promising solutions.

## REAL STORIES INVOLVING FIREARMS AND WASHINGTON CHILDREN

*Barry, a 16-year-old, under the influence of methamphetamines, died after being shot while fleeing in a stolen car.*

*Lonnie, age 15, committed suicide by shooting himself in the head with a rifle belonging to the family. He was upset about having to move and told several friends and a teacher that he was going to commit suicide.*

*Alicia, a 13-year-old, shot herself after an argument with her parents. She had been grounded due to a recent criminal charge of minor in possession of alcohol. The loaded and unlocked pistol was available in the parent's bedroom.*

*Aaron, age 16, had been playing Russian roulette with other friends present. He had removed all bullets but one, and on the third try he shot himself.*

<sup>1</sup> Firearms include handguns, shotguns, hunting rifles, and military firearms, but not explosives.

- **See Suicide and Homicide chapters for additional firearm prevention strategies.**
- If you have firearms in your home:
  - Store firearms unloaded, locked up, and out of children's reach. Store handguns in a lockbox with a push button lock. Use trigger locks for rifles and shotguns. Better yet, use a large gun safe that stores both handguns and long guns.
  - Store ammunition in a separate, locked location.
  - Keep gun storage keys and lock combinations hidden in a separate location.
  - Teaching children NOT to handle or to stay away from guns is NOT enough.
- Check with neighbors, friends, or relatives – or adults in any other homes where children visit – to ensure they follow safe storage practices if firearms are in the home.
- If older youth are allowed access to firearms for sport, they should take firearm safety training courses and store guns locked when not in use.

*PREVENTION STRATEGIES FOR COMMUNITIES**FIREARMS*

- Promote safe storage of guns and ammunition. Medical and social service professionals should ask about firearms and encourage safe storage practices to keep firearms away from children and teens.
- Develop community coalitions that bring together law enforcement, public health, child protective services, parent groups, firearm owners, and others to develop, implement, and monitor a local plan to reduce access to guns and provide temporary safe storage when temporary removal of the firearm from a home is necessary.
- Create community coalitions to identify and support children and families at risk of firearm violence.
  - Promote broad distribution of information about risk factors related to childhood depression and family violence.
  - Educate teens about managing life stresses, seeking help, and developing healthy options to address stress.
  - Promote awareness of and screening for childhood and adolescent depression.
  - Provide effective support services for children in various settings.
  - Develop and use programs that support children and teens after school.
- Current laws that restrict access to firearms should be enforced. This includes removing firearms from the possession of those charged with or convicted of a certain misdemeanors and felonies, enforcing waiting periods and criminal background checks, and ensuring that identification is not falsified by minors who want to obtain a firearm illegally. Also, people over 18 who are legally purchasing a firearm but are in turn selling or giving it to a minor should be provided information about the legal ramifications of such a transaction.
- Child Access Prevention (CAP) laws are another promising strategy to prevent injury and death of children caused by firearms. CAP laws are intended to make guns inaccessible to children by holding adults responsible for improperly stored firearms. Part of the effectiveness of CAP laws is in raising public awareness about the danger for firearms in the home and encouraging safe storage of guns as an injury prevention measure.
- Promote zero tolerance of firearms on school property.

## Number of Injuries<sup>2</sup>

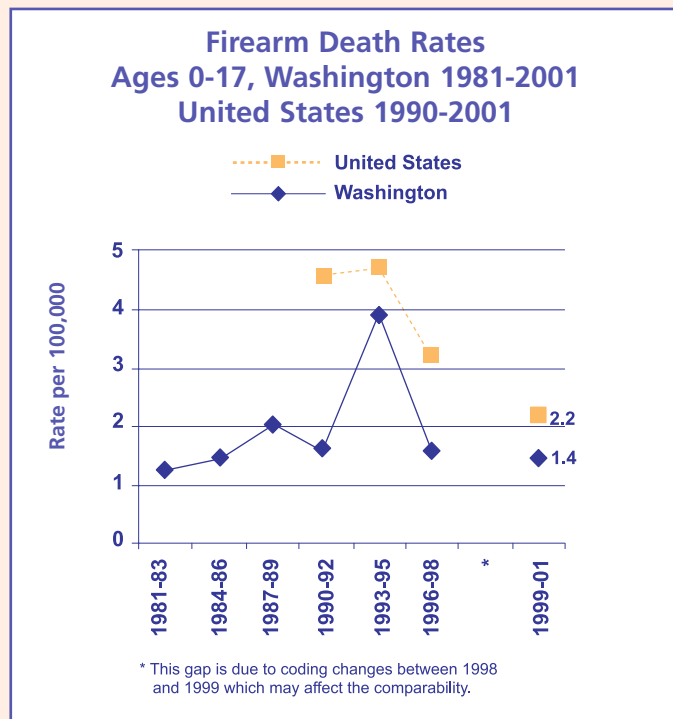
During 1999-2001, firearm injuries were the third leading cause of injury death for Washington children 10-17 years old. For Washington children 0-17 years old, firearm injuries account for an annual average of:

- 22 deaths.
- 24 hospitalizations.
- About 170 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

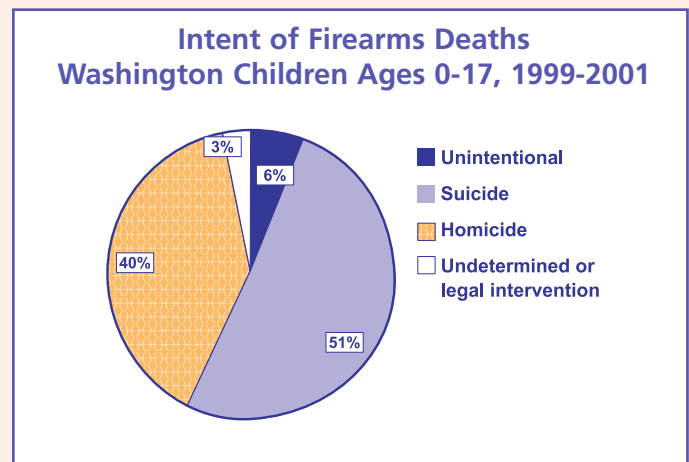
There was no change in the firearm death rates for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001.

Since 1990<sup>4</sup>, Washington State firearm death rates have been lower than those nationally. The national and Washington trends are parallel, showing a peak during 1993-1995 and a decline since that time.

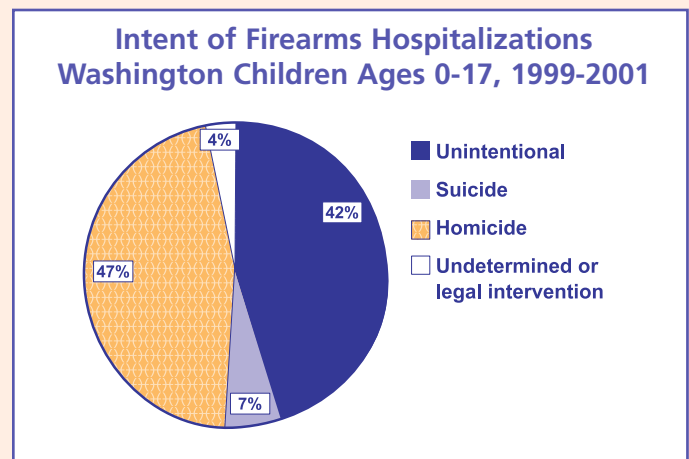


## Intent

Among Washington children 0-17 years old the majority of firearm deaths (51 percent) were suicides, and about 40 percent were homicides.



Many of the firearm hospitalizations among Washington children 0-17 years old were homicide attempts (47 percent), and about 42 percent were unintentional shootings.



<sup>2</sup> Unless otherwise specified, data are for firearm injuries among Washington children 0-17 years old during 1999-2001. Rates are per 100,000 children who are Washington residents.

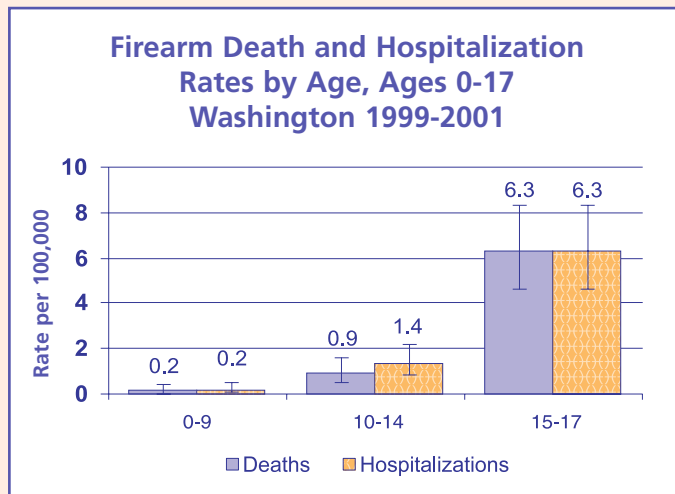
<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

## Age and Gender

The 15-17 age group had the highest rate of deaths and hospitalizations from firearms.

Males 15-17 years old had a firearm death rate three times higher, and a hospitalization rate almost seven times higher than females of the same age.



## Access and Weapon Carrying

Data from the 2000 Washington State Behavioral Risk Factor Surveillance System show that approximately 288,000 Washington households with children have firearms, and an estimated 562,000 children (about 37 percent) live in a household with firearms. For about 132,000 children, the firearm in their household is unlocked, and for about 27,000 children, the firearm is both unlocked and loaded.

Data from the 2002 Washington Healthy Youth Survey show that about 26 percent of twelfth graders, 22 percent of tenth graders, and 17 percent of eighth graders responded that it was easy to get a handgun.



About 6 percent of eighth, tenth, and twelfth graders reported that they carried a weapon, such as a gun, knife, or club on school property, and about 3 percent reported they had carried a gun in the past 30 days.

Local child death review teams reviewed 60 out of the 65 firearm deaths during 1999-2001.

Key findings include:

- Forty-four (73 percent) of all the deaths occurred in the home of the child, a friend or a relative.
- The most common firearms used were handguns used in 38 (63 percent) of the deaths, and rifles or shotguns, used in 16 (27 percent) of the deaths. The type of firearm used was unknown in 10 percent of the deaths reviewed.
- Thirty (50 percent) of the firearm deaths reviewed were suicides, 25 (42 percent) were homicides, four (7 percent) were unintentional, and one was undetermined.
- In three deaths (5 percent), the firearm was known to be locked, and the key was not stored with the lock.
- The ammunition was stored with the firearm in 27 (45 percent) of the 60 deaths.
- Impairment by or use of alcohol and/or other drugs was noted in 20 (33 percent) of the deaths. The youth was impaired in 18 (30 percent) of the deaths, supervising adult in two, perpetrator in one, and another individual in one.<sup>4</sup>
- Fourteen of the 25 firearm homicides (56 percent) were committed by someone the child knew.
- Eight of the 60 children (13 percent) who died were known to have a family history of domestic violence.
- Teams concluded that 82 percent of the 60 firearm-related deaths were preventable, 7 percent were not preventable, and the teams were unable to determine preventability for 11 percent.

<sup>4</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

# PEDESTRIAN



www.pedbikeimages.org/Dan Burden

## Summary

Pedestrian injuries<sup>1</sup> are the third leading cause of injury death for Washington children 1-9 years old. Pedestrian death rates were highest in two subgroups of children younger than 18: 0-4 years old and 15-17 years old. The majority of pedestrian deaths occurred to children on a driveway or city street by a motor vehicle; however, there were three pedestrian deaths by a train.

Pedestrian injuries may be prevented by supervising children under 10 years old when they are around motor vehicles, teaching children traffic skills, and by creating safe places for children to walk.

## REAL STORIES OF PEDESTRIAN DEATHS INVOLVING WASHINGTON CHILDREN

*Timothy, age 7, was hit by a truck while playing "chicken" in a busy roadway with five other similarly aged kids. School staff identified a lack of play areas for children near the apartment complex where the death occurred.*

*Sarah, a 16-month-old toddler, was run over by her father as he backed a pickup truck after she walked behind the vehicle.*

*Jessica, age 14, was struck by a car as she walked to school. She crossed at an intersection with a marked crosswalk but no traffic lights. The car was speeding and left the scene.*

<sup>1</sup> Includes injuries to a person from being hit by a motor vehicle, train or another mode of transportation.



- Adult supervision is vital when a child crosses the street until a child demonstrates traffic skills and judgment. Remember that most children under the age of 10 will not have the necessary judgment and skills to fully understand traffic rules, concepts, distances or speeds.
- Drivers should make sure they have visual contact with young children before backing out of a driveway.
- Take the time to teach children developmentally and age appropriate pedestrian safety strategies:
  - Look left, right, and left again before crossing the street. Cross when the street is clear and keep looking both ways while crossing.
  - Understand and obey traffic and railroad crossing signals.
  - Cross at corners, using traffic signals, crossing guards, and crosswalks when available. Children should be taught to look both ways, and make sure cars have stopped for them before crossing the street at corners or in a crosswalk.
  - Do not enter the street from between parked cars or behind large objects that limit visibility, such as bushes or shrubs.
  - Play in designated areas that are away from traffic and have a physical barrier between the child and traffic.
  - Stop at the curb, or at the edge of the road if there is no curb, before crossing the street. Never run into a street without stopping – even for a ball, pet, or any other reason.
  - Walk facing traffic, on sidewalks, paths, or road shoulder. Walk as far to the left as possible, if there are no sidewalks.
  - Watch for cars that are turning or backing up.
- Children should not walk alone at night. If walking at dusk, dawn, or in the evening is unavoidable, require children to carry a flashlight and wear reflective materials on clothing or a reflective vest.
- Make sure children always take a designated route to common destinations, such as school. Walk with the child to find the safest path.

*PREVENTION STRATEGIES FOR COMMUNITIES**PEDESTRIAN*

- Educate and train parents and their children about safe pedestrian skills.
- Enforcement**
- Advocate for enforcement of state and local laws that prohibit:
    - Failing to yield the right-of-way to pedestrians.
    - Speeding in school zones.
    - Speeding in residential areas.
    - Vehicles from passing school buses while loading and unloading passengers.
- Ordinance Development**
- Advocate for funds dedicated to safer walking environments (e.g. more pedestrian bridges, streetlights, playgrounds, sidewalks, paths and trails) at the federal, state, and local levels.
  - Advocate for community laws and policies that provide physical separation of child pedestrian routes and recreation areas from motor vehicle traffic.
  - Advocate for driveway designs that do not require backing up.
  - Support policy changes for automakers to install back up sensors to detect young children, warning sounds, or provide better visibility.
  - Re-route or place train corridors away from neighborhoods.
  - Provide barriers, and audio and visual signals at all road-railroad track intersections.

## Number of Injuries<sup>2</sup>

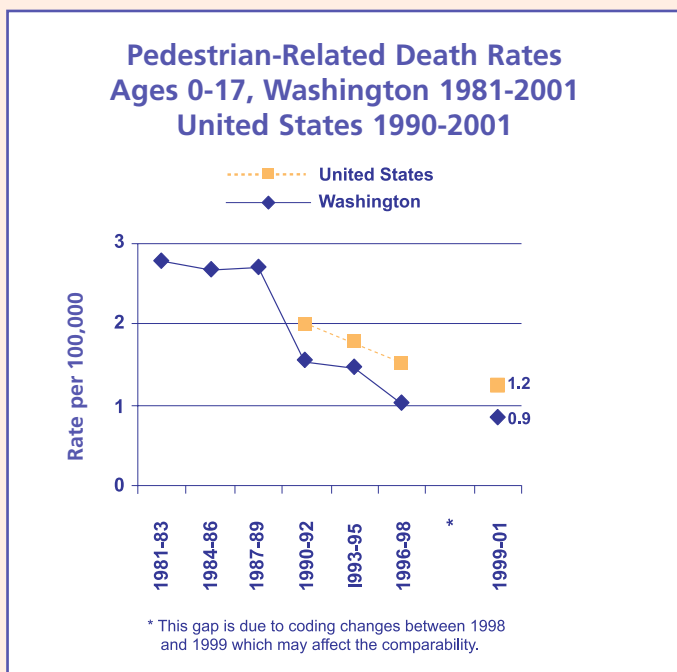
During 1999- 2001, pedestrian injuries were the third leading cause of injury death for Washington children 1-9 years old. Pedestrian injuries in Washington children 0-17 years old account for an annual average of:

- 13 deaths.
- 116 hospitalizations.
- About 1,240 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

From the three-year time period of 1981-83 to 1999-2001, there was a statistically significant decline in pedestrian-related deaths for Washington children 0-17 years old, from 2.8 to 0.9 per 100,000. This represents about a 69 percent decrease in the pedestrian-related death rate.

Pedestrian-related death rates in Washington have been slightly lower than national rates since 1990.<sup>4</sup>

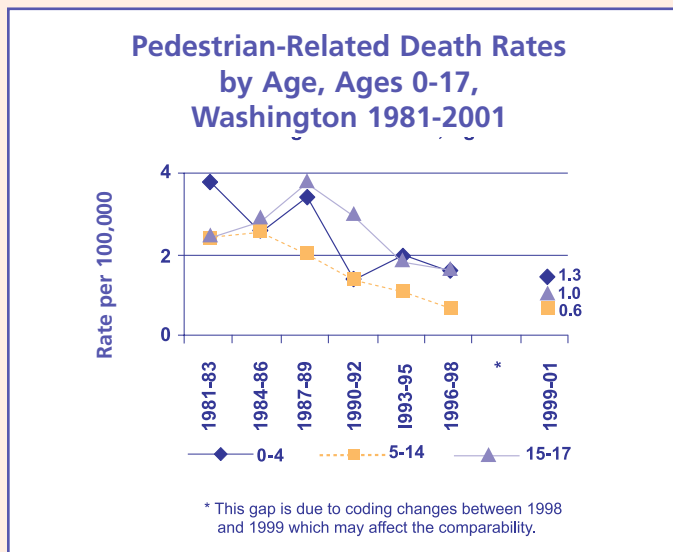


<sup>2</sup> Unless otherwise specified, data are for pedestrian injuries among children 0-17 years old during 1999-2001, except in the age and gender section, which is for 1997-2001. Rates are per 100,000 children who are Washington residents.

<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

A statistically significant decline in Washington pedestrian deaths was observed in all three age groups (0-4, 5-14, and 15-17).



## Intent

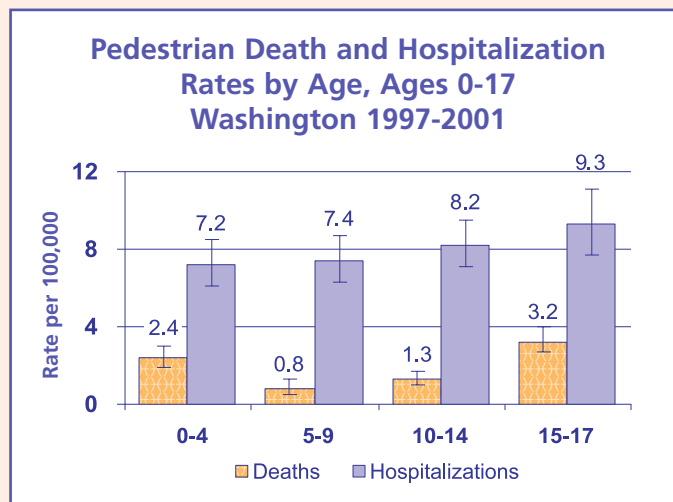
All of the pedestrian deaths and hospitalizations to Washington children 0-17 years old were unintentional.

## Age and Gender

During 1997-2001, the highest pedestrian-related death rates in Washington were among those 0-4 and 15-17 years old.

Hospitalization rates due to pedestrian injuries among Washington children 0-17 years old were similar in every age group.

Males were 1.6 times more likely than females to be hospitalized due to a pedestrian-related injury.



## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

---

Local Child Death Review teams reviewed 33 out of the 40 pedestrian deaths during 1999-2001. Key findings include:

- Location of the pedestrian deaths:
  - Driveway – nine (27 percent)
  - City street – nine (27 percent)
  - Rural road – five (15 percent)
  - In an intersection – three (9 percent)
  - On train tracks – three (9 percent)
  - Other – four (12 percent)
- Vehicle responsible for the deaths:
  - Truck – 12 (36 percent)
  - Car – 10 (30 percent)
  - Van or SUV – six (18 percent)
  - Train – three (9 percent)
  - Utility trailer – one (3 percent)
  - Unknown – one (3 percent)
- Contributing factors cited in the deaths:
  - Driver error – six (18 percent)
  - Lack of child supervision – four (12 percent)
  - Speed or weather – three (9 percent)
  - Poor judgment – two (6 percent)
  - Road conditions – one (3 percent)
- Two of the drivers (6 percent) who struck and killed a child were teens.
- Impairment by or use of alcohol and/or other drugs was a factor in two (6 percent) of the deaths. The pedestrian youth was impaired in one of the deaths, and the supervising adult in the other death.
- Teams concluded that 85 percent of the 33 pedestrian deaths were preventable, 6 percent were not preventable, and teams were unable to determine preventability for 9 percent.

# POISONING



## Summary

Injuries from poisoning<sup>1</sup> are the second leading cause of injury hospitalization for Washington children 0-17 years old. Injury rates from poisoning were highest among the 15-17 age group. The majority of hospitalizations from poisoning were self-inflicted. Most of the deaths from poisoning in Washington children were caused by either someone else's prescription medication (32 percent), over the counter medication (26 percent), or an illegal drug (26 percent).

For strategies to prevent self-harm from poisoning, see the Suicide chapter.

Other strategies that may prevent poisoning injuries include educating families to eliminate potential hazards (such as making sure medicines, vitamins, and household cleaners are either locked with a child safety latch or out of reach), calling the national poison hotline, and preventing drug abuse. To prevent drug abuse, parents and caregivers need to talk with children about drugs, set clear limits, be a good role model, and be involved in children's lives, and communities need to support drug prevention programs.

## REAL STORIES OF POISONING DEATHS INVOLVING WASHINGTON CHILDREN

*April, age 2, died of cocaine intoxication. It was unknown how she ingested the cocaine. A crack pipe was found on the comforter next to her. The police reported many calls to this residence for drug related disturbances.*

*Heather, age 14, died of an unintentional drug overdose of ecstasy, mushrooms, and cocaine after being transported to the emergency room by medics.*

*William, age 17, was found dead in the back seat of his car after an intentional overdose of over-the-counter medications. According to the receipts found in the back seat, he had purchased the medications at four different stores.*

<sup>1</sup> Injuries due to the damaging physiologic effects of ingestion, inhalation or other exposure to a broad range of pharmaceuticals, illicit drugs, chemicals, including pesticides, heavy metals, gases, vapors, and a variety of common household substances, such as bleach and ammonia.

- Call the national poison toll-free hotline (800-222-1222) if you think a child has consumed a poisonous substance. **If the child is unconscious, having trouble breathing or non-responsive, call 911.**
- Make sure school children are well supervised after school.
- Teach children about hazards of prescription drugs.
- Always read labels on medicines and follow the directions exactly.
- Make sure household cleaners, medicines, and vitamins are either locked with a child-safety latch or are out of reach.
- Request child-resistant packaging when possible.
- Find out which plants are poisonous and recommendations about how to protect children from the plants by contacting the Washington Poison Control Center at 800-732-6985.
- Carbon monoxide detectors should be installed in all homes.
- Parents can prevent drug abuse by sensitive and responsive parenting, talking with their children about drugs before they are teens, setting clear rules for their children about drugs and consequences for breaking the rules, being a good role model, helping with peer pressure, and being involved in children's lives.
- **See Suicide chapter for suicide prevention strategies.**

PREVENTION STRATEGIES FOR COMMUNITIES

POISONING

- Support drug prevention efforts, that include:
  - School-based drug prevention programs that teach young people to resist alcohol, tobacco, and other drugs by developing personal and social skills, such as decision making, stress management, communication, social interaction, conflict resolution, and assertiveness.
  - Offer family-based prevention programs that promote positive relationships between parents and children.
- Educate children and families in their communities about poisonous substances.
- The local system of emergency response providers should be trained and knowledgeable regarding how to respond to and care for poisonings in children.
- Distribute, install, and maintain carbon monoxide detectors for low-income families.
- Support comprehensive laws requiring carbon monoxide detectors that are hard wired in all existing and new structures.
- **Support suicide prevention programs (see Suicide chapter).**

## Number of Injuries<sup>2</sup>

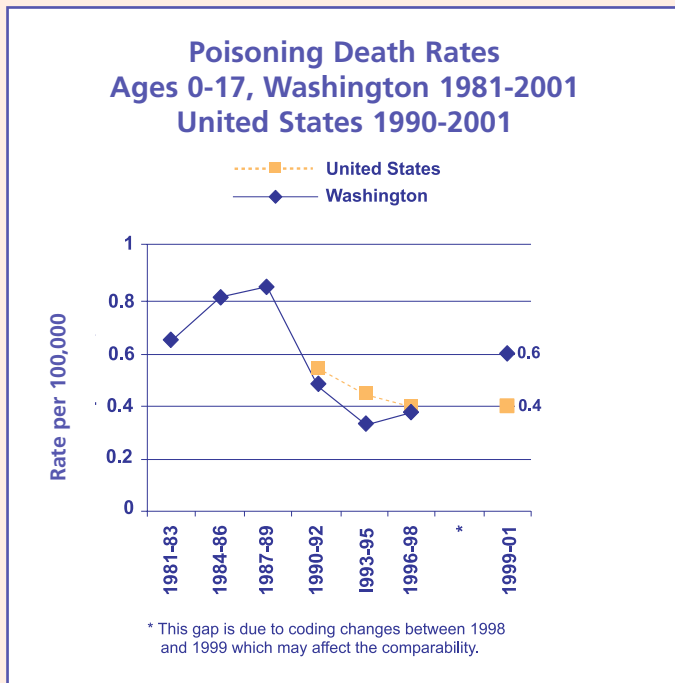
During 1999-2001, poisoning injuries were the second leading cause of injury hospitalization for Washington children 0-17 years old. Poisoning injuries among Washington children 0-17 years old account for an annual average of:

- 9 deaths.
- 465 hospitalizations.
- About 3,490 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

There has been little change in the poisoning death rates for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001. Because of the small number of poisoning deaths, there is insufficient data to detect a statistically significant trend in death rates over time.

Poisoning death rates in Washington have been similar to national rates since 1990.<sup>4</sup>



## Intent

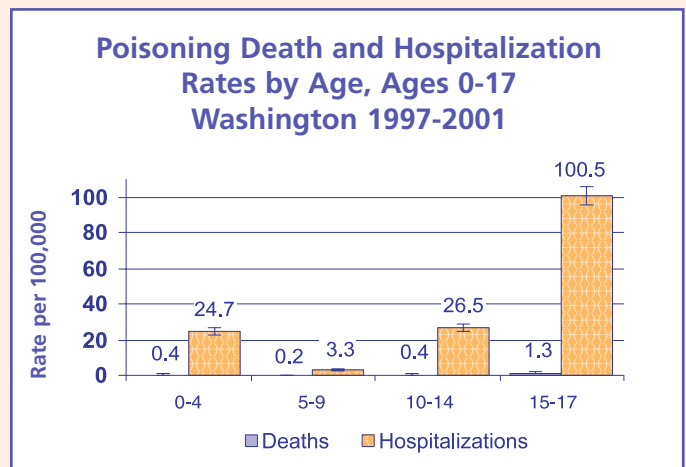
Among Washington children 0-14 years old, the majority of poisoning deaths were either unintentional (38 percent) or undetermined (44 percent). The majority of poisoning hospitalizations were unintentional (57 percent).

Among teens 15-17 years old, the majority of poisoning deaths were either unintentional (55 percent) or self-inflicted (36 percent). The majority of poisoning hospitalizations were self-inflicted (75 percent).

## Age and Gender

The highest poisoning death and hospitalization rates were among Washington children 15-17 years old.

Males had a poisoning death rate that was about two times higher than females. However, the poisoning hospitalization rate was about two times higher for females than males.



<sup>2</sup> Unless otherwise specified, data are for fire and burn injuries among children 0-17 years old during 1999-2001, except in the age and gender section, which is for 1997-2001. Rates are per 100,000 children who are Washington residents.

<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.



## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

Local child death review teams reviewed 19 of the 24 poisoning deaths<sup>5</sup> during 1999-2001.

Key findings include:

- The primary causes of poisoning deaths were prescription medication (six deaths), over the counter medication (five deaths), or an illegal drug (five deaths).
- For the eight adolescents 15-17 years old, three died from over the counter medication, three from an illegal drug, and two from prescription medication.
- Only one involved substance was stored in a locked area.
- None of the substances accessed by the four infants or toddlers were known to be in safety packaging.
- For the one death due to carbon monoxide poisoning, there was no carbon monoxide detector in the house.
- The medications involved were dispensed incorrectly according to the package or health professional instructions in five of the deaths. In these five deaths, the parents made the error in four cases, and the physician in one case.
- The Poison Control Center was called in only one unintentional overdose of a medication.
- Impairment by or use of alcohol and/or other drugs were a factor in ten of the deaths reviewed. The youth was the one impaired in eight of the deaths, the supervising adult in one, a friend in one, and a boyfriend in one.<sup>6</sup>
- Teams concluded that 14 of the 19 poisoning deaths were preventable, three were not preventable, and the teams were unable to determine preventability in two cases.

<sup>5</sup> See Small Numbers section of Appendix D.

<sup>6</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

# FIRE & BURN



## Summary

Fire and burn injuries<sup>1</sup> are the second leading cause of injury hospitalization and the fifth leading cause of injury death for Washington children 0-4 years old. In Washington, wood stoves were the most commonly cited fire source in child deaths. A properly located and functioning smoke alarm was known to be present in only four out of 25 child fire deaths. A parent was supervising most of the children at the time of their deaths.<sup>2</sup>

Protecting small children from hot objects and liquids, installing and maintaining smoke alarms, eliminating potential fire hazards, and teaching children what to do when they hear a smoke alarm may prevent childhood injuries due to fire and burns.

## REAL STORIES OF FIRES INVOLVING WASHINGTON CHILDREN

*Amber, age 14, was awakened to a smoke alarm in the middle of the night. She got out of bed and noticed a fire burning in an unoccupied back bedroom. She immediately woke up her grandmother, who called 911 as they evacuated their mobile home. The smoke alarm had been installed about a year before, and probably saved their lives.*

*Ethan, a 3-year-old, perished in a house fire started by a space heater with a spliced cord and magazines stacked around the space heater. There was no working smoke alarm in the home.*

*Madison, age 4, died in a structural fire caused by an uncertified wood stove. She and her older sister were sleeping when the stove ignited the rest of the room. The teen was unable to rescue Madison in time. There was no smoke alarm in the home.*

*Justin, age 10, ran to tell his mother that there was smoke in the house. When the firefighters arrived the house was filled with smoke, there was a fire in the woodstove, and the fire alarms were sounding. Their fire alarm had been installed one month before this incident.*

*Michael, age 5, died in fire that began on the couch in his home. It was suspected that one of his siblings might have started the fire.*

<sup>1</sup> Includes injuries due to fire, flames, hot objects, and substances (such as hot liquids and steam, caustics, and corrosives). Not included are burns from electric current, from exposure to radiation from infrared heaters and lamps or from ultraviolet light sources (e.g., sunburn), or from explosions of combustible material.

<sup>2</sup> Child death review teams define supervising as an adult being with the child; it does not imply anything about the quality of the supervision. So in a fire in the middle of the night when everyone was sleeping, the teams would say that the parents were supervising the child.

## *PREVENTION STRATEGIES FOR PARENTS & CAREGIVERS TO PREVENT FIRE INJURY* *FIRE & BURN*

- Smoke alarms should be installed outside bedrooms and on every floor in every home. Maintain alarms by replacing batteries at least once a year, and replace alarms every 10 years or when needed.
- Plan and practice two escape routes out of each room of the house at various times of the day and night. Keep furniture and other heavy objects out of the way of doors and windows so they don't block an escape. Designate an outside meeting place so all members of the family can be accounted for quickly.
- Children should know the sound of the smoke alarm. When they hear it, teach them to:
  - Crawl low under smoke.
  - Touch doors before opening them. If the door is hot, use an alternative exit.
  - Never go back into a burning building.
  - "Stop, drop, and roll," if their clothes are on fire.
- Caregivers need to be aware that sleeping children through age 16 may not wake up to the sound of a smoke alarm. Children may need to be rescued if there is a fire while they are sleeping.
- Take children to the local fire station for a tour. Children will be able to see a firefighter in full gear and learn that he or she is someone who saves children – not someone to be afraid of or hide from.
- Keep matches, lighters, and other heat sources out of children's reach.
- Keep flammable items such as clothing, furniture, newspapers, and magazines away from the fireplace, heater, and radiator.
- Avoid plugging several appliance cords into the same electrical socket.
- Replace old or frayed electrical wires and appliance cords, and keep all electrical wires on top of, not beneath, rugs.
- Store all flammable liquids such as gasoline outside of the home.

## *PREVENTION STRATEGIES FOR COMMUNITIES TO PREVENT FIRE INJURY* *FIRE & BURN*

- Provide free smoke alarms to families in need and provide education to families about fire prevention, smoke alarm installation and maintenance, and the importance of escape plans.
- Educate children and caregivers about fire safety and burn prevention.
- Incorporate firefighters into community coalitions.
- Support comprehensive laws requiring smoke alarms in both new and existing dwellings (RCW 48.48.140) and rental owners to notify their tenants about the fire protection features of their building (RCW 59.18.060).

## *PREVENTION STRATEGIES FOR PARENTS & CAREGIVERS TO PREVENT BURN INJURY* *FIRE & BURN*

- Always check bath water for "hot spots" by moving your hand back and forth through the water.
- Keep hot foods and liquids away from babies and young children.
- Set aside hot drinks before picking up or holding a child.
- Supervise children at all times while they are in the kitchen.
- Use the back burners on the stove and turn pot handles toward the back of the stove. It is very important that pot handles not extend over the edge of the stove where a child could reach them and pull the pot over, resulting in a serious scald burn.
- Hot food and beverages should be kept away from the edge of counters and tables so that children cannot reach them. Appliance cords, placemats, and tablecloths also must be kept out of reach to prevent children from pulling hot items down on themselves.
- Use safety gates around wood and gas stoves and fireplaces to prevent young children from getting too close.

## Number of Injuries<sup>3</sup>

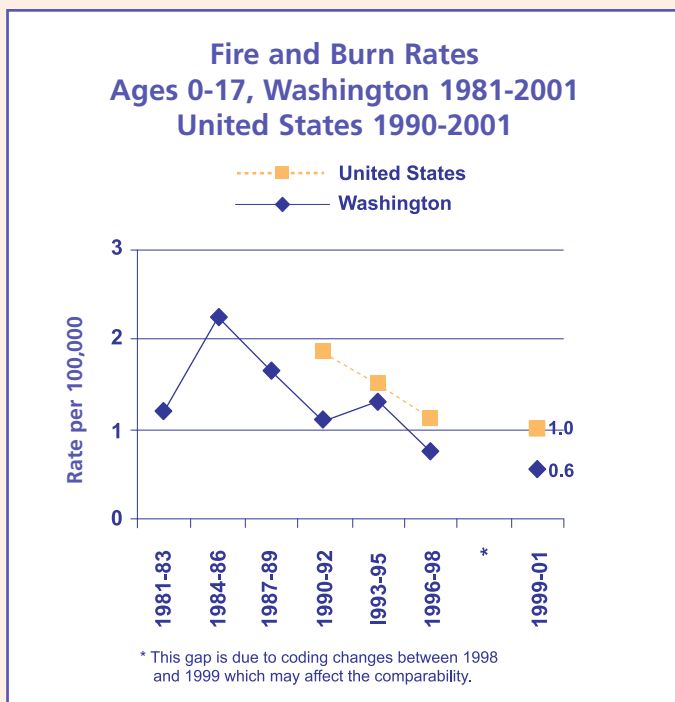
During 1999-2001, injuries due to fire and burns were the second leading cause of injury hospitalization and the fifth leading cause of injury death for Washington children 0-4 years old. For Washington children 0-17 years old, injuries due to fire and burns account for an annual average of:

- 9 deaths.
- 163 hospitalizations.
- About 3,320 visits to a hospital emergency department.

## Time Trends<sup>4</sup>

From the three-year time period of 1981-83 to 1999-2001, there was a statistically significant decline in the death rates due to fire and burns for Washington children 0-17 years old, from 1.2 to 0.6 per 100,000. This represents about a 53 percent decrease in the fire and burn death rate.

Since 1990<sup>5</sup>, Washington death rates due to fire and burns have been lower than those nationally. There has also been a statistically significant decline in national rates since 1990.



<sup>3</sup> Unless otherwise specified, data are for fire and burn injuries among children 0-17 years old during 1999-2001, except in the age and gender section, which is for 1997-2001. Rates are per 100,000 children who are Washington residents.

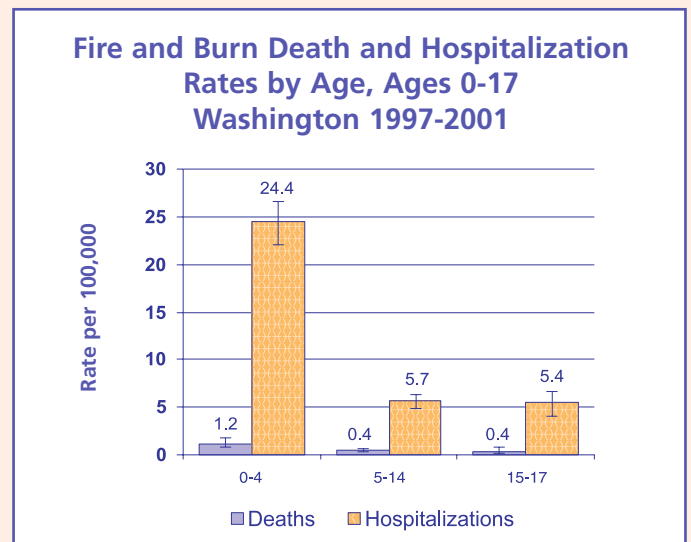
## Intent

The majority of deaths due to fire and burns (96 percent) and hospitalizations (97 percent) among Washington children 0-17 years old were unintentional.

## Age and Gender

During 1997-2001, the highest death and hospitalization rates due to fire and burns in Washington were among those 0-4 years old.

There was not a significant difference between males and females in the death rate due to fire and burns.



Male children had a fire and burn hospitalization rate that was 1.7 times higher than females.

<sup>4</sup> See Comparability Ratio section in Appendix D.

<sup>5</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

Local child death review teams reviewed all of the 26 deaths due to fire and burns during 1999-2001. Key findings include:

- A wood stove was the most commonly cited fire or burn source, followed by candles and matches. The fire or burn source was unknown in one-fourth of the deaths.
- Twenty-one of the fire deaths (81 percent) occurred in the child's home, and 19 (73 percent) occurred between the hours of 9 p.m. and 6 a.m.
- In four of the deaths (15 percent), there was a suspicion that a child had started the fire either intentionally or by playing with something flammable.
- A properly located, working smoke alarm was known to be present in only four of the 25 (16 percent) fire-related deaths that occurred in a building.
- Of the 25 fire-related building deaths, none of the families were known to have had a fire escape plan.
- Impairment by or use of alcohol and/or other drugs was noted in four of the 26 deaths (16 percent); in three deaths (11 percent) the youth was impaired, and in three deaths (11 percent) the supervising adult was impaired.<sup>6</sup>
- A parent was supervising 17 of the 26 children (65 percent) at the time of their deaths.<sup>7</sup>
- Teams concluded that 91 percent of the 26 fire and burn deaths were preventable, 4 percent were not preventable, and the teams were unable to determine preventability for 4 percent.

<sup>6</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

<sup>7</sup> Child death review teams define supervising as an adult being

with the child; it does not imply anything about the quality of the supervision. So in a fire in the middle of the night when everyone was sleeping, the teams would say that the parents were supervising the child.

# BICYCLE



## Summary

Bicycle injuries<sup>1</sup> are the second leading cause of injury hospitalization for Washington children 5-14 years old. Bicycle hospitalization rates were highest in the 10-14 age group. Bicycle-related hospitalizations are more common among males than females. During 1990-2001, there was a significant decline in the rate of bicycle-related head injury hospitalizations. The majority of bicycle deaths in Washington occurred to children who were not wearing a bicycle helmet.

Head injury is the most common cause of death and serious disability in bicycle crashes. Correctly wearing a bicycle helmet reduces the risk of a head injury by nearly 85 percent.

Strategies for preventing bicycling injuries should focus on increasing helmet use, teaching children principles of safe bicycling, creating safe places for children to ride a bicycle and educating motorists in sharing the road with bicyclists.

## REAL STORIES OF BICYCLE CRASHES AMONG WASHINGTON CHILDREN

*Kevin, age 5, was riding down a steep driveway when his bicycle hit a chain stretched across the driveway. His helmet has a dent on the front from the force of hitting the ground. The doctor said the helmet saved his life.*

*Sally, age 12, died after she rode her bicycle across the road without looking for vehicles. A car struck her, and she was thrown into the windshield of the car. She was not wearing a helmet.*

*Jonathan, age 8, was showing off by riding with his eyes closed. When he fell, his helmet, instead of his bare head, hit the curb. He had a concussion. His aunt Peggy, who is a trauma nurse, convinced him to wear the bicycle helmet.*

*Paul, age 13, died after being struck by a car. He had ridden his bicycle through a stop sign and into the path of an oncoming vehicle. He was not wearing a bicycle helmet.*

*Renee, age 11, rode her bicycle off a jump and fell. She hit her head and the helmet cracked down the middle. She had a slight concussion, but it could have been worse.*

<sup>1</sup> Includes injuries due to collisions between a bicycle and a motor vehicle, train, or another bicycle, or by another mishap.



- Children, teens, and adults should wear an approved bicycle helmet every time they ride a bicycle. Bicycle helmets should be replaced after a bicycle crash.
- Bicycle helmets should fit correctly. Here are some things to look for:
  - The rim of the helmet in the front should rest one or two fingers above the eyebrows.
  - The straps of the helmet form a "V" under the ears when buckled. The strap should be snug and comfortable.
  - When the child opens his mouth as wide as possible, they should feel the helmet hug his or her head. If not, it needs to be tightened.
- Cyclists should be restricted to safe areas off the road until they can demonstrate that they know and follow the rules of the road. Supervision is essential until children develop the necessary traffic skills and judgment.
- Teach children the rules of bicycling on roads. Remember that most children under the age of 10 will not have the necessary judgment and skills to fully understand traffic rules and concepts. These include:
  - Ride with traffic flow on the side of the road, not against traffic.
  - Ride as far to the right side of the road as possible.
  - Follow all traffic regulations (e.g., stop at stop signs and red lights).
  - Use appropriate hand signals.
  - Stop and look left, right, and left again before entering a street.
  - Look back and yield to traffic coming from behind before turning left at intersections.
  - Don't ride when it's dark. If riding at dusk, dawn, or in the evening is unavoidable, wear reflective material on clothing, and use lights and reflectors on the bicycle.
- Children's bicycles should be the proper size and should have reflectors on the front, back, and sides. Check local ordinances and state laws for bicycle light and reflector requirements ([www.massbike.org/bikelaw](http://www.massbike.org/bikelaw)).
- Make sure the reflectors are secure, brakes work properly, gears shift smoothly, and tires are tightly secured and properly inflated.

- Form community coalitions to:
  - Provide bicycle helmets to families in need, and provide education to families about how bicycle helmets can prevent bicycle-related injuries.
  - Involve parents and teachers as role models to encourage children to wear bicycle helmets. Parents should develop a contract with their children to always wear a helmet while riding.
  - Work with local businesses that rent bicycles to make sure bicycle helmets are made available with all bicycle rentals.
  - Hold school- or community-wide bicycle skills rodeos. These rodeos, designed to increase bicycle safety awareness and teach the importance of riding responsibly, include bicycle helmet inspections, safety courses, and fun activities for families. Give bicycle helmets as a reward for passing a bicycle safety education class.
- Encourage enforcement of the law that requires bicyclists to use lights and reflectors when riding at dusk, dawn, or in the evening (RCW 46.61.780).
- Challenge community leaders to develop bicycle paths and bicycle-friendly communities (e.g., designated bicycle lanes and traffic calming devices).
- Educate motorists about safely sharing the road with bicyclists and proper behavior around bicyclists.
- Encourage the adoption and enforcement of laws that require bicyclists to wear a helmet every time they ride. Enforcement strategies include traditional tickets, fix-it tickets, prizes, incentives, and educational classes.
- Encourage the adoption and enforcement of school policies requiring students who ride to school to wear a helmet.
- Encourage the introduction of bicycle safety into school curriculum.

## Number of Injuries<sup>2</sup>

During 1999-2001, bicycle injuries were the second leading cause of injury hospitalization for children 5-14 years old. Bicycle injuries among Washington children 0-17 years old account for an annual average of:

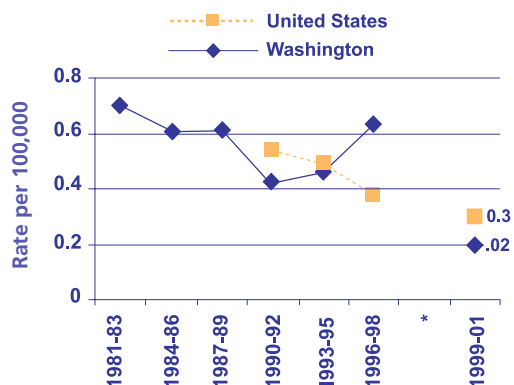
- 3 deaths.
- 206 hospitalizations.
- About 6,800 visits to a hospital emergency room.

## Time Trends<sup>3</sup>

There has been little change in the bicycle-related death rates for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001. Because of the small number of bicycle deaths, there is insufficient data to detect a statistically significant trend in death rates over time.

Bicycle-related death rates in Washington were similar to national rates since 1990<sup>4</sup>, except for the years 1996-1998, when rates in Washington were higher.

**Bicycle-Related Death Rates  
Ages 0-17, Washington 1981-2001  
United States 1990-2001**



\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

<sup>2</sup> Unless otherwise specified, data are for bicycle injuries among Washington children 0-17 years old during 1999-2001. Rates are per 100,000 children who are Washington residents

<sup>3</sup> See Comparability Ratio section in Appendix D.

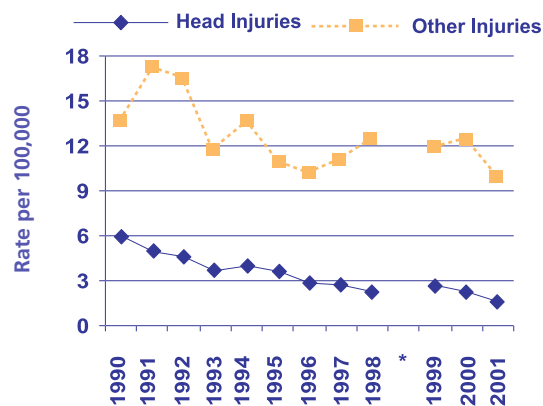
<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

<sup>5</sup> See Trend Analysis section in Appendix D.

<sup>6</sup> Bicycle-related death rates were not examined by age and gender because of the small number of deaths.

During 1990-2001, there was a statistically significant decline in bicycle-related head injury hospitalization rates for Washington children 0-17 years old, from 6.0 to 1.6 per 100,000.<sup>5</sup> Bicycle-related head injuries that resulted in hospitalization declined at a greater rate than other bicycle-related injuries during the same period.

**Bicycle-Related Hospitalization Rates  
Ages 0-17, Washington 1990-2001**



\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

## Intent

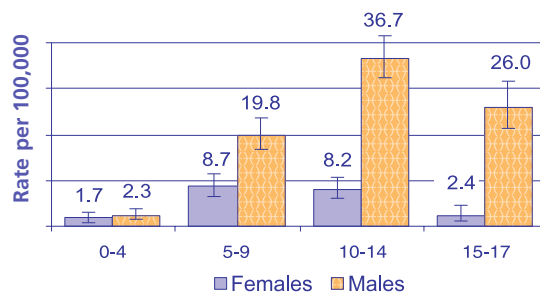
All of the bicycle deaths and hospitalizations to Washington children 0-17 years old were unintentional.

## Age and Gender<sup>6</sup>

The highest bicycle-related hospitalization rates in Washington were among those 10-14 years old.

Overall, Washington male children had a bicycle-related hospitalization rate that was almost four times higher than females.

**Bicycle Hospitalization Rates  
by Age and Gender  
Washington 1999-2001**



## Hour and Month of Injury

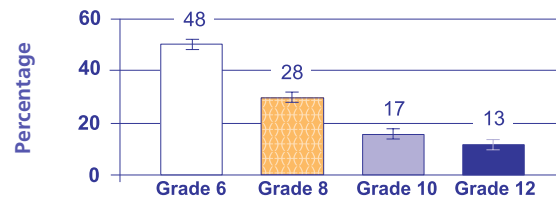
- Six of the nine bicycle deaths of Washington children occurred between 3 p.m. and 9 p.m.
- Six of the nine bicycle deaths also occurred between June and September.

## Bicycle Helmet Importance and Use

Research has shown that head injury is the most common cause of death and serious disability in bicycle crashes, and that correctly wearing a bicycle helmet reduces the risk of a head injury by nearly 85 percent. Research has also shown that for every \$1 spent on bicycle helmets, \$30 is saved in direct medical costs.

Data from the 2002 Washington Healthy Youth Survey show that almost half of sixth graders report wearing a bicycle helmet most of the time or always while riding a bicycle. However, by grade 12 only about 13 percent of students report wearing a bicycle helmet always or most of the time while riding a bicycle.

**Reporting Wearing a Bicycle Helmet Most of the Time or Always**



## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

Local child death review teams reviewed eight out of the nine bicycle deaths<sup>7</sup> during 1999-2001. Key findings include:

- Three of the fatal bicycle crashes occurred at an intersection, two happened on a city street, and three were on a rural road.
- Only one child was wearing a bicycle helmet at the time of the crash.

- Contributing factors include driver error, vehicle speed, and bicyclist error.
- Impairment by or use of alcohol and/or other drugs was not cited as a factor in any of the bicycle-related deaths.
- Teams concluded that seven of the eight bicycle-related deaths were preventable. For one death, teams were unable to determine preventability.

<sup>7</sup> See Small Numbers section of Appendix D.

# FALLS



## Summary

Injury due to falls<sup>1</sup> is the leading cause of injury hospitalization for Washington children ages 0-17. Hospitalization rates due to falls are similar in every age group of Washington children. Hospitalization due to falls is more common among males than females, especially for males 15-17 years old.

Fall injuries may be prevented by using stationary activity centers for infants instead of those on wheels, having safety gates at the top and bottom of stairs in homes when young children are present, installing window guards, and having playgrounds meet safety guidelines. For suicide prevention strategies, see the Suicide chapter.

## REAL STORIES OF FALL DEATHS INVOLVING WASHINGTON CHILDREN

*Bryan, age 10, fell after hopping on to a banister at school to slide down the banister. He slipped and fell down the stairs.*

*Jennifer, age 17, died after committing suicide by jumping from a bridge into a river. She was reported to be unhappy over being teased at school.*

*Ed, age 2, fell out of a second floor window. There was a box under the window that he used to climb up to the window. The window did not have a window guard.*

<sup>1</sup> Includes falls from steps or stairs; ladders or scaffolds; one level to another (such as playground equipment, cliff, chair, or bed); out of a building or other structure; into a hole; slipping or tripping; jumping or being pushed from a high place; and other and unspecified falls.

- Supervise young children when using a changing table, or when they are on other furniture.
- Use stationary activity centers in place of baby walkers on wheels.
- Use safety gates at the top and bottom of stairs when a young child is present.
- Move chairs and furniture away from windows.
- Install window guards that meet new federal standards for emergency exits on windows located on the ground floor and up.
- Open double-hung windows from the top only.
- Children should not play on fire escapes, roofs and balconies, especially those that are not adequately fenced with vertical bars spaced more than four inches apart.
- Playground surfaces should be able to absorb the shock of falls. Good surface materials include shredded rubber, wood chips, and sand. Avoid playgrounds with asphalt, concrete, grass, and dirt surfaces. **See other playground tips under prevention strategies for communities.**
- **See Suicide chapter for more information on suicide prevention.**

PREVENTION STRATEGIES FOR COMMUNITIES

FALLS

- Raise community awareness about prevention of injuries due to falls.
- Advocate for community-wide programs to encourage the use of window guards.
- Encourage adoption of playground equipment standards.
- Advocate for community playgrounds to meet the U.S. Consumer Product Safety Commission Guidelines (available at [www.cpsc.gov/cpscpub/pubs/325.pdf](http://www.cpsc.gov/cpscpub/pubs/325.pdf), page 46).
- Tips to help ensure playground safety include:
  - The surface underneath playground equipment must have at least 12 inches of wood chips, mulch, sand, or pea gravel, or mats made of safety-tested rubber or rubber-like materials.
  - Check that protective surfacing extends at least six feet in all directions beyond play equipment. For swings, the protective surfacing, in back and front, should extend twice the height of the suspending bar.
  - Make sure play structures more than 30 inches high are spaced at least nine feet apart.
  - Check for dangerous hardware, like open "S" hooks or protruding bolt ends.
  - Make sure spaces that could trap children, such as openings in guardrails or between ladder rungs, measure less than 3.5 inches or more than 9 inches.
  - Check for sharp points or edges in equipment.
  - Look out for tripping hazards, like exposed concrete footings, tree stumps, and rocks.
  - Make sure elevated surfaces, like platforms and ramps, have guardrails to prevent falls.
  - Check playgrounds regularly to see that equipment and surfacing are in good condition.
  - Supervise children on playgrounds.
- Inquire about playground maintenance schedules.
- Ensure that playground equipment is age-appropriate, and that children are supervised while on the playground.



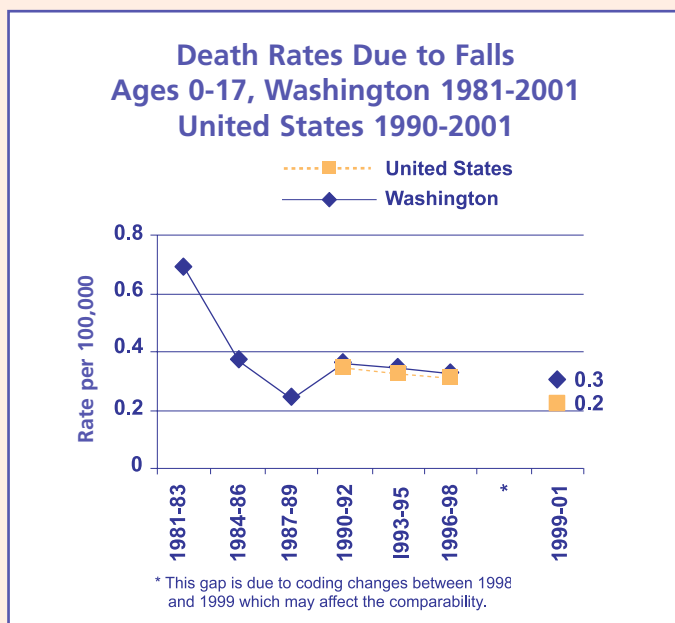
## Number of Injuries<sup>2</sup>

During 1999-2001, injuries due to falls were the leading cause of injury hospitalization for Washington children 0-17 years old. Injuries due to falls account for an annual average of:

- 5 deaths.
- 804 hospitalizations.
- About 54,300 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

There was no statistically significant change in the death rate due to falls for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001. Because of the small number of deaths due to falls, there is insufficient data to detect a statistically significant trend in death rates over time. Death rates due to falls in Washington have been similar to national rates since 1990.<sup>4</sup>



<sup>2</sup> Unless otherwise specified, data are for fall injuries among Washington children 0-17 years old during 1999-2001. Rates are per 100,000 children who are Washington residents.

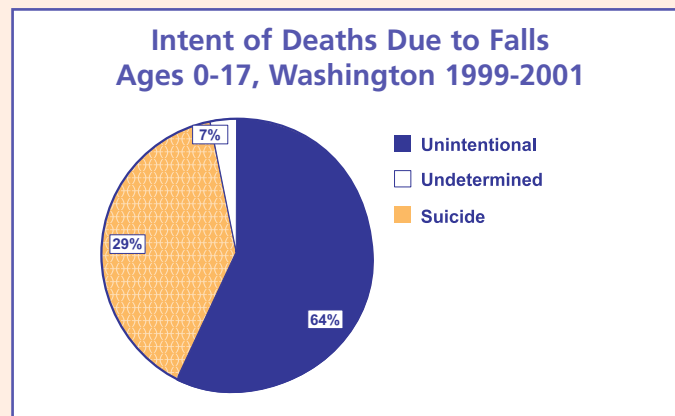
<sup>3</sup> See Comparability Ratio section in Appendix D.

<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

<sup>5</sup> Fall-related death rates were not examined by age and gender because of the small number of deaths.

## Intent

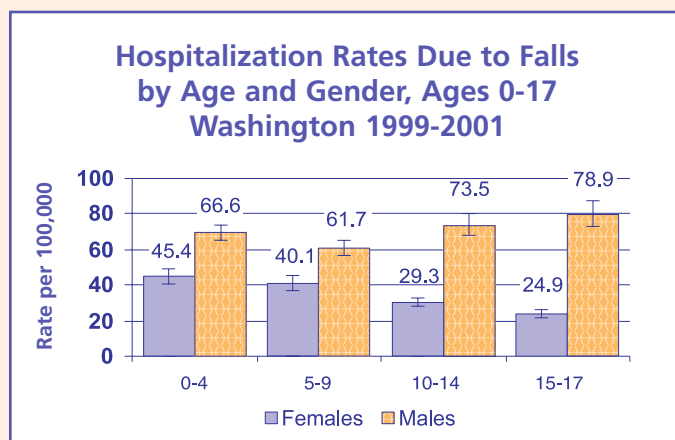
About two-thirds of the fall deaths among Washington children 0-17 years old were unintentional, while 29 percent were suicides. The four suicides occurred among teens, ages 16 and 17 years old. Almost all of the hospitalizations due to falls (99 percent) were unintentional.



## Age and Gender<sup>5</sup>

Hospitalization rates due to falls among Washington children 0-17 years old were similar in every age group.

Overall, males had a hospitalization rate due to falls that was about two times higher than females. Males 0-9 years old had a hospitalization rate due to falls that was about 50 percent higher than females, while males 15-17 years old had a hospitalization rate that was three times higher than females. The hospitalization rate for females significantly decreased with age.



## Types of falls

The most common type of fall leading to hospitalization among Washington children 0-17 years old is a fall from one level to another, such as from playground equipment or a bed.

### *CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA*

Local child death review teams reviewed 11 out of the 14 fall deaths<sup>6</sup> during 1999-2001. Key findings include:

- Children fell from a natural elevation (such as a cliff), a bridge, the same elevation (for example, tripping), a window, and a banister.
- None of the children who died were in a baby walker at the time of the fall.
- Seven of the 11 deaths were to children 15-17 years old.
- The location of the falls included a street or highway, school, park, child's residence, hotel, and after-school program facility.
- Impairment by or use of alcohol or other drugs was a factor in two of the 11 deaths; the youth was the one impaired in both of the deaths.
- Teams concluded that seven of the 11 fall-related deaths were preventable, one was not preventable, and the teams were unable to determine preventability for three deaths.

<sup>6</sup> See Small Numbers section of Appendix B.

# HOMICIDE & ASSAULT



## Summary

Homicide<sup>1</sup> is the fourth leading cause of injury death for Washington children 0-17 years old. Homicide rates are highest in two sub-groups of children younger than 18: infants, and adolescents 15-17 years old. Firearms are the leading cause of homicide, while being struck by a blunt object is the leading cause of assault hospitalizations among Washington children. Most of the children were killed by an adult they knew. About half of the children who died had a referral to Child Protective Services.

About one out of four students had been in a physical fight in the past year, one out of 12 had carried a weapon in the past 30 days, and about 50 percent of students resolved their conflicts by talking them out, according to data from the Washington State's Healthy Youth Survey in 2002.

Strategies that may prevent violence include:

- Teaching adults and children how to manage anger, resolve conflicts in a peaceful manner, and about the consequences of violence.
- Having caregivers develop open communication with children.
- Increasing the availability and accessibility of youth programs for after-school and summer.
- Promoting prenatal and early infancy home visitation by trained nurses to at-risk families.
- Decreasing access to firearms.
- Improving the identification and treatment of abused children, victims of violence, and children at high risk of violent behavior.

## REAL STORIES OF ABOUT HOMICIDE AMONG WASHINGTON CHILDREN

*May, age 15, was shot by her boyfriend after she broke off her relationship with him. He then shot himself.*

*Devin, age 7, was shot twice and killed by a parent who then committed suicide.*

*Joseph, 1 year old, died after being shaken and thrown against the wall by his parent. The baby was reportedly "fussy" before the incident. The parent pled guilty to murder.*

*Louis, age 15, was stabbed in a fight with a rival gang member by another teenager.*

*Mary, age 3, died after being beaten by her mother's boyfriend. The family had multiple referrals and investigations by Child Protective Services.*

<sup>1</sup> Includes injuries inflicted by another person with intent to injure or kill, by any means.

- See Firearms chapter for prevention strategies related to preventing firearm-related injuries.
- Parents and caregivers should seek help if they need to address their own anger management or violent behaviors.
- Parents and caregivers should give children consistent, appropriate attention.
- Develop good communication with children. Talk with them about school, social activities, their interests, and concerns.
- Set clear standards for children's behavior, and be consistent about rules and discipline.
- Make sure children are supervised at all times. Children should participate in age-appropriate after-school activities. Quality after-school activities should:
  - Model positive and healthy relationships.
  - Be held in a spacious and appropriate environment.
  - Have engaging and diverse activities.
  - Have an emphasis on safety and health.
  - Be organized and have capable supervision.
- Teach children how to manage anger, and promote peaceful resolutions to conflict. Role model this behavior.
- Talk to children about the consequences of alcohol and drug use, weapon use, gang participation, and violence.
- Limit and monitor children's exposure to violence in the home, community, and media. Talk with them about their experiences when exposed to violence.
- For caregivers with youth who are already showing aggressive tendencies or other problem behaviors, seek help from a school counselor, mental health professional, or other resources to address this behavior early.

*PREVENTION STRATEGIES FOR COMMUNITIES**HOMICIDE & ASSAULT*

- Encourage and support prenatal and early infancy home visitation programs by trained nurses for at-risk families.
- Increase the availability and accessibility of youth activities and supportive programs for after school and during the summers.
- Expand education curricula from elementary to high school to teach children how to manage conflict, hostility, and aggression with nonviolent means.
- Promote peer counseling and conflict resolution.
- Expand parent education classes to parents with children of all ages and include violence prevention strategies.
- Promote job training and employment opportunities for youth and families.
- Expand programs to identify and treat children who have been abused.
- Expand programs that prevent and treat domestic violence.
- Encourage schools to create a safe learning environment for all students, including interventions targeting bullying and the presence of weapons on campus.
- Improve identification, referral, and treatment of children and families at high-risk of violent behavior because of chronic use of alcohol and/or other drugs.
- Improve the community's social service and healthcare system's ability to identify and treat of victims and perpetrators of violence.

## Number of Injuries<sup>2</sup>

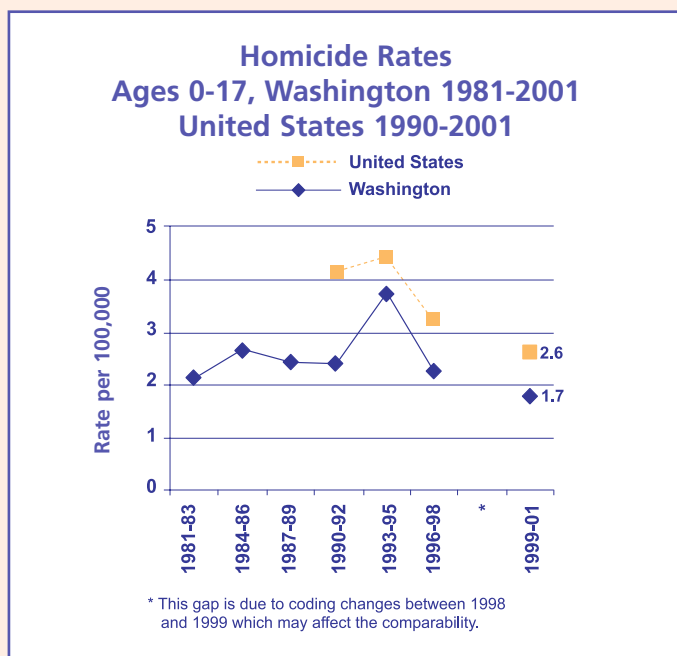
Frightening and disturbing news stories about children being involved in violent acts are fairly common. Fortunately there are prevention strategies that work to prevent violence. Currently in Washington, homicide and assaults account for an annual average of:

- 26 deaths.
- 67 hospitalizations.
- About 9,000 visits to a hospital emergency department.

## Time Trends<sup>3</sup>

There was little change in homicide rates for Washington children 0-17 years old, from the three-year time period of 1981-83 to 1999-2001.

Since 1990<sup>4</sup>, national homicide rates have been higher than those in Washington. The national and Washington trends are parallel, showing a peak during 1993-1995, and a decline since that time.



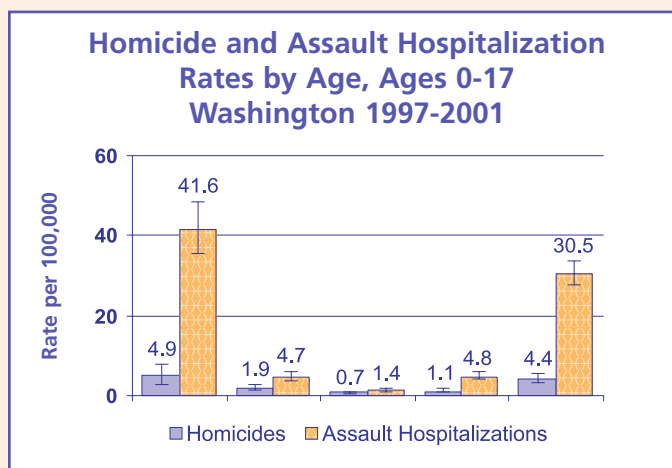
## Cause

Firearms (53 percent) and stabbing (20 percent) were the leading cause of homicide among Washington children 0-17 years old.

Being struck by or against an object (50 percent) and being stabbed (29 percent) were the leading cause of assault hospitalizations among Washington children 0-17 years old.

## Age and Gender

During 1997-2001, Washington children 0-4 and 15-17 years old had the highest homicide and assault hospitalization rates.



Males had a homicide rate that was 1.5 times higher than females; males 15-17 years old had a homicide rate that was three times higher than females the same age.

Males had an assault hospitalization rate that was 2.5 times higher than females; males 15-17 years old had an assault hospitalization rate that was 5.5 times higher than females the same age.

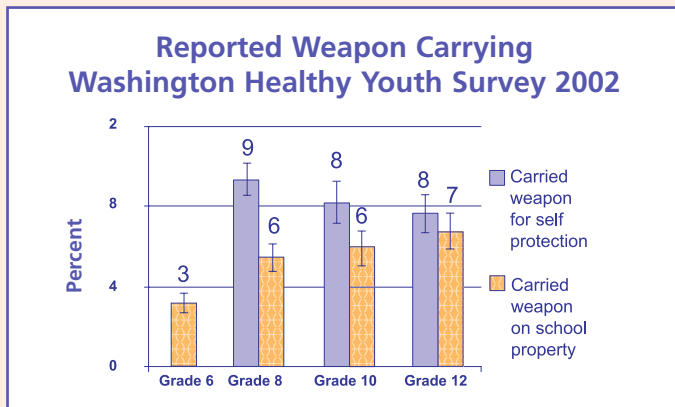
<sup>2</sup> Unless otherwise specified, data are for homicide injuries among Washington children 0-17 years old during 1999-2001, except in the age and gender section, which is for 1997-2001. Rates are per 100,000 children who are Washington residents.

<sup>3</sup> See Comparability Ratio section in Appendix D.

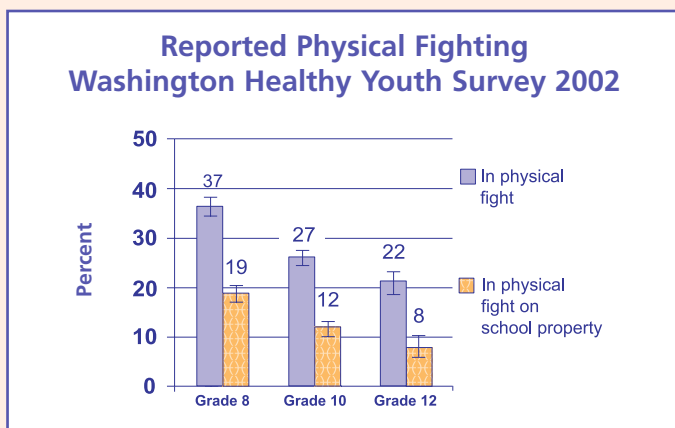
<sup>4</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

## Weapon Carrying, Physical Fights, and Conflict Resolution

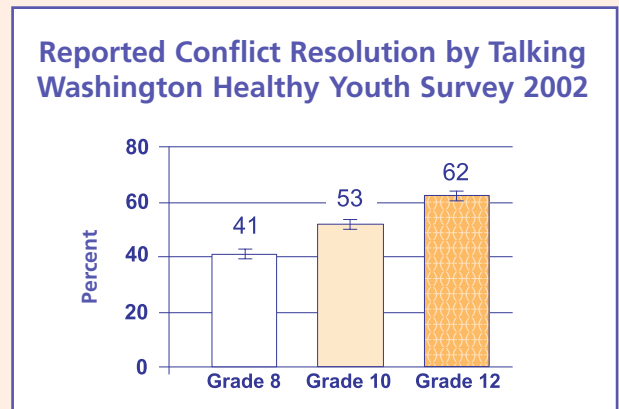
Data from the 2002 Washington Healthy Youth Survey show that about one out of 12 eighth, tenth, and twelfth graders reported carrying a weapon for self-protection (not for hunting, fishing, or camping) in the past 30 days, and slightly fewer reported carrying a weapon on school property in the past 30 days.



Being in a physical fight in the past year was reported by about 28 percent of eighth, tenth, and twelfth graders in Washington, and about 13 percent reported being in a physical fight on school property. Both behaviors were most prevalent among eighth graders, and decreased with grade. Because it is not known whether participation in all reported physical fights was voluntary, these incidents might better be referred to as "acts of violence".



About 40 percent of eighth graders reported often resolving conflicts by talking about them, and by twelfth grade about 60 percent of students were resolving conflicts this way.





Local child death review teams reviewed 67 out of the 79 homicide deaths during 1999-2001.

Key findings include:

- Twenty-five of the 67 homicides (37percent) were committed with firearms, 19 (28 percent) by being struck by an object, 12 (18 percent) by stabbing, and the remainder by other means.
- Fifty-one of the 67 children (76 percent) were murdered by an adult they knew. In 43 of the 67 deaths, the perpetrator was a relative, boyfriend, mother's boyfriend, or friend.
- A stranger murdered four (6 percent) of the 67 children.
- About half of the homicides occurred in the child's or a relative's residence.
- Of the 39 homicides of children younger than 15 years old, 29 (74 percent) were perpetrated by a relative, mother's boyfriend, or stepparent.
- Of the 28 homicides in which the victim was 15-17 years old, the perpetrator was a friend or acquaintance in 13 (46 percent) of the cases.
- In 14 of the 67 homicides (21 percent), the perpetrator was under age 20. The age of the perpetrator was unknown in 19 of the reviews.
- Thirty of the 67 of the children (45 percent) had a known history of being abused or neglected, or their family had a known history of domestic violence.
- Almost half of the children's families never had a referral to Child Protective Services.
- Twenty-five (37 percent) were clients of Children's Administration at the Department of Social and Health Services<sup>5</sup> within a year of the child's death.
- Impairment by or use of alcohol and/or other drugs was noted in 21 (33 percent) of the 67 deaths. The youth was impaired in 13 of the deaths, the supervising adult in four, the perpetrator in two, and another individual in two of the deaths.
- Teams concluded that 70 percent of the 67 homicides were preventable, 18 percent were not preventable, and the teams were unable to determine preventability for 12 percent.

<sup>5</sup> Children's Administration provides Child Protective Services (CPS) as well foster care and adoption. For Child Death Review, a child is considered a client of the Children's Administration even if the

CPS referral did not pass the initial screening process for an accepted referral.

# SUICIDE



## Summary

Suicide<sup>1</sup> is the second leading cause of injury death for Washington children 15-17 years old. Firearms and suffocation (hanging) were the primary methods of suicide among Washington children. Most suicides occurred at home.

In 2002, about one out of six students had thought about completing suicide, one out of eight had a suicide plan, and one out of 13 made a suicide attempt in the past year, according to Washington State's Healthy Youth Survey.

Suicides may be prevented by knowing the warning signs of suicide and depression, what to do when warning signs are observed, educating youth and caregivers about suicide risk, identifying and supporting children at risk of suicide and their families, and ensuring accessible and effective clinical care for mental, physical, and substance abuse disorders.

## REAL STORIES OF ABOUT YOUTH SUICIDE IN WASHINGTON

*Lonnie, age 15, shot himself in the head with a rifle belonging to the family. He was upset about having to move. He told several friends and a teacher that he was going to complete suicide.*

*Frank, age 14, completed suicide by an overdose of prescription medicine. He had purchased the medicines at several different stores and told a friend he was "tired of it all".*

## REAL STORIES ABOUT SUICIDE PREVENTION

*The Washington State Youth Suicide Prevention Program<sup>2</sup> held an awareness presentation at a Boy Scout troop meeting. In the troop, there were two boys who had attempted suicide, and several that were dealing with depression. After the presentation, one of the parents decided to have her son evaluated for depression. Treatment for teen depression is an important step in preventing a possible suicide.*

*Julie, age 15, received youth suicide-prevention training through the Washington State Youth Suicide Prevention Program. She had to put her training into action because a friend had expressed suicidal ideation. Julie told her mom about her friend because, as part of the training, she learned to tell an adult when concerned about a friend's safety.*

<sup>1</sup> Includes injuries that are intentional and self-inflicted.

<sup>2</sup> For more information, go to [www.yspp.org](http://www.yspp.org).

- Know the warning signs of suicide. Warning signs include:
  - A previous suicide attempt.
  - Current talk of suicide or making a plan.
  - A strong wish to die or a preoccupation with death.
  - Giving away prized possessions.
  - Signs of depression (such as moodiness, hopelessness, or withdrawal).
  - Increased alcohol and/or other drug use.
  - Hinting at not being around in the future.
- Know what to do if you observe a warning sign.
  - Show you care.
  - Ask the question, "Are you thinking about suicide?"
  - Get help by contacting someone with professional skills to provide the help.
  - Remove any firearms from the home.
- Talk to children about suicide and depression. Chances are teens will talk to their friends before talking to a parent or caregiver about their feelings. Teens should know how to respond.
- If a child is exhibiting warning signs of suicide, make sure that they do not have access to firearms.

*PREVENTION STRATEGIES FOR COMMUNITIES**SUICIDE*

- Educate all youth and caregivers about suicide risk, and how to respond.
- Create community coalitions to identify and support children at risk of suicide and their families.
  - Promote broad distribution of information about factors related to youth suicide and depression.
  - Educate teens about the handling of disputes in a nonviolent manner, conflict resolution, and problem solving.
  - Promote awareness of suicide intervention resources, such as mental health centers, counseling centers, and hotlines.
  - Promote screening for depression of children and adolescents in a variety of settings.
  - Develop and use programs that support children and adolescents after school.
  - Train gatekeepers in screening, crisis intervention, and referral services.
- Create community coalitions that bring together law enforcement, public health, child protective services, survivor advocates, parent groups, firearm owners, and others to develop, implement, and monitor a local plan to reduce access to guns.
- Ensure accessible and effective clinical care for mental, physical, and substance abuse disorders.
- Educate media about suicide prevention and use the media to educate a broader audience.
- Develop a plan for what should be done after a suicide occurs to decrease the chances of additional suicides.
- Support bullying prevention efforts.

### Number of Injuries<sup>3</sup>

Youth suicide is preventable, yet it continues to impact many of Washington's youth and their families. For Washington children 0-17 years old (mostly children over 10 years old), suicide and suicide attempts account for an annual average of:

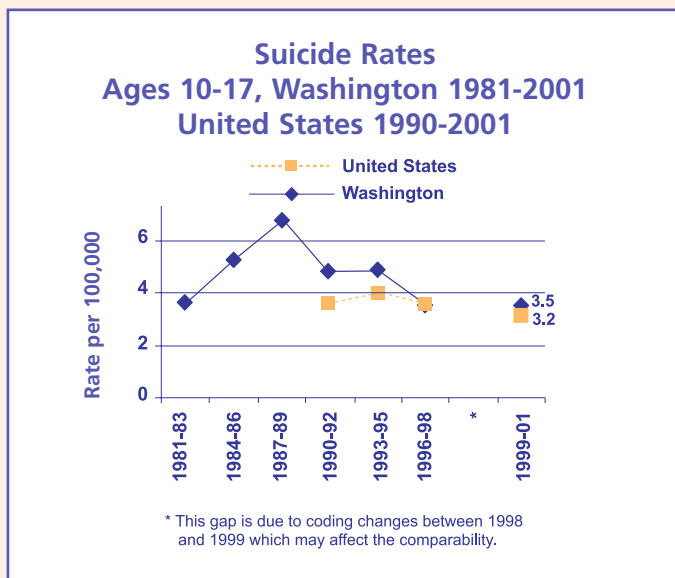
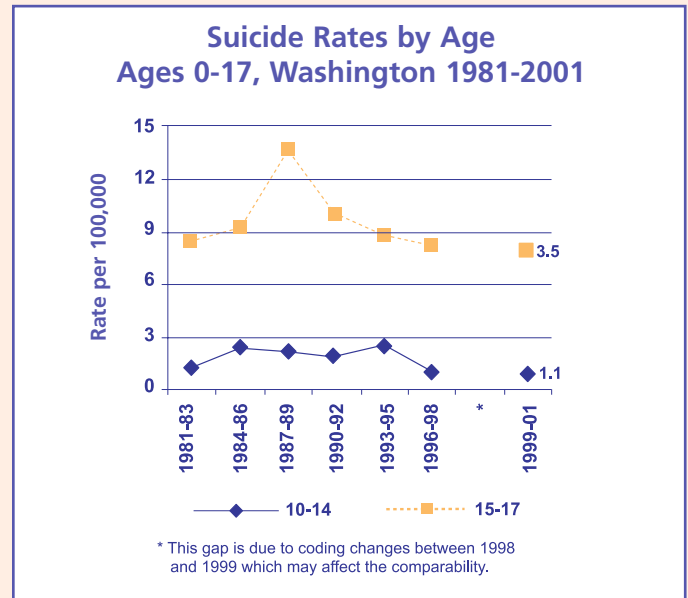
- 24 deaths.
- 326 hospitalizations.
- About 1,100 visits to a hospital emergency department.

### Time Trends<sup>4</sup>

There has been little change in the suicide rates for Washington children 10-17 years old, from the three-year time period of 1981-83 to 1999-2001.

Suicide rates in Washington were higher than national rates in the early 1990s<sup>5</sup>, but the difference appears to be decreasing.

There has been little change in suicide rates in the two age groups (10-14 and 15-17 year olds) during the same time period.



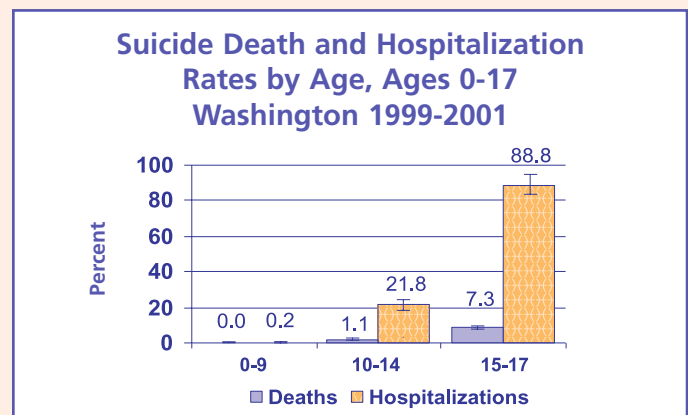
### Method

Firearms (47 percent) and suffocation (40 percent) were the leading methods of suicide among Washington children 0-17 years old.

Poisoning (82 percent) and cuts (15 percent) were the leading methods of suicide-attempt hospitalizations among Washington children 0-17 years old.

### Age and Gender

The 15-17 age group had the highest rate of suicide and suicide-attempt hospitalizations among Washington children. There were no suicides to children under the age of 10, however there were three suicide-attempt hospitalizations.



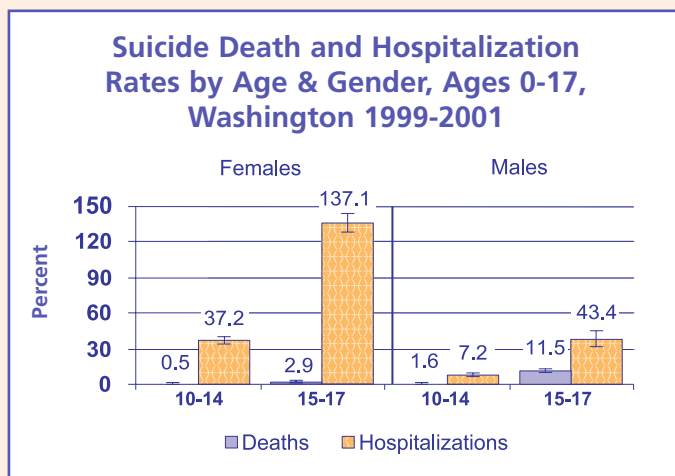
<sup>3</sup> Unless otherwise specified, suicide data are for Washington children 0-17 years old during 1999-2001. Rates are per 100,000 children who are Washington residents.

<sup>4</sup> See Comparability Ratio section in Appendix D.

<sup>5</sup> National injury death rates for children 0-17 years old are not available prior to 1990.

Males 10-17 years old were 3.5 times more likely to die from suicide compared with females of the same age. The reverse was true for hospitalizations: females 10-17 years old were 3.5 times more likely to be hospitalized due to a suicide attempt compared to males of the same age.

The methods used to attempt or complete suicide varied by gender: females were more likely to poison themselves whereas males were more likely to hang themselves.



## Prevalence of Suicide Plans and Attempts, and Depression

Data from the 2002 Washington State Healthy Youth Survey show that about 16 percent of sixth, eighth, tenth, and twelfth graders (about 50,650 students) reported they had considered attempting suicide in the past year.

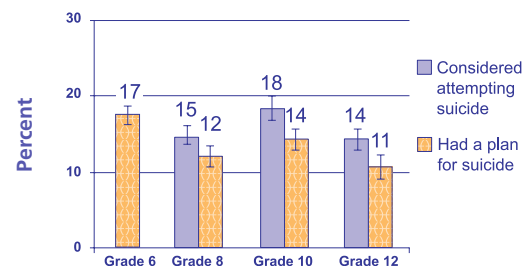
In the past year, about 12 percent of eighth, tenth, and twelfth graders (about 28,900 students) reported having a plan for their suicide attempt.

The data also show that about 7 percent of eighth, tenth, and twelfth graders (about 18,250 students) reported attempting suicide in the past year.

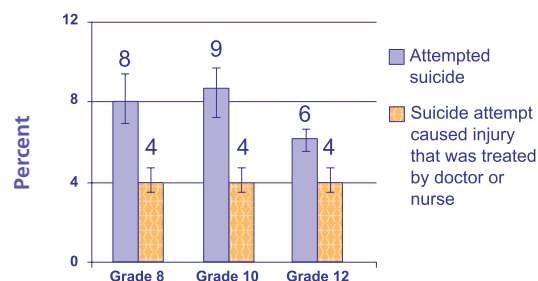
Almost 4 percent (about 8,450 students) reported being injured enough during the suicide attempt to warrant seeing a doctor or nurse in the past year.

Depression is a factor that is associated with suicide, and almost 30 percent of eighth, tenth, and twelfth graders reported having been

## Reported Suicide Considerations and Plans Washington Healthy Youth Survey



## Reported Suicide Attempts and Injuries Washington Healthy Youth Survey



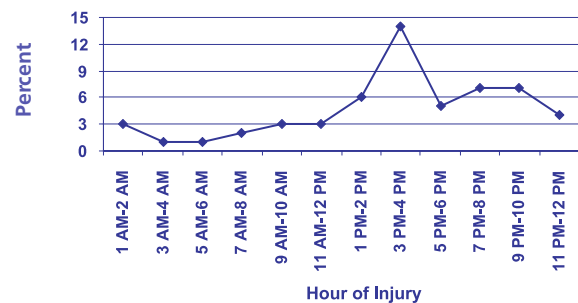
depressed in the past year. In addition, about one out of 12 eighth, tenth, and twelfth graders reported having no one to turn to when they were depressed, and about 25 percent of the students reported that they would not seek help if they were feeling depressed or suicidal.

## CIRCUMSTANCES SURROUNDING DEATHS FROM WASHINGTON CHILD DEATH REVIEW DATA

Local Child Death Review teams reviewed 64 out of the 73 suicides during 1999-2001. Key findings include:

- Thirty (47 percent) of the 64 suicides were completed with a firearm, and 25 (39 percent) were the result of a hanging.
- Fifty-one (80 percent) of the 64 child suicide victims were male.
- Fifty-one (80 percent) of the 64 children had at least one known warning sign for completing suicide. Warning signs included previous suicide attempt; talked about suicide; recent life crisis; history of mental health problems; a friend or relative completed suicide; ran away from home; received mental health services; intentionally hurt self previously; or engaged in life threatening behaviors.
- Twenty (31 percent) of the 64 children had three or more known warning signs for suicide.
- Seven (11 percent) of the 64 of the children had a history of family domestic violence, abuse, or neglect.
- Forty-four (69 percent) of the 64 suicides occurred at the child's residence.
- Suicides were most likely to occur in the after-school hours (3-5 p.m.).
- Impairment by or use of alcohol and/or other drugs was noted in 14 (22 percent) of the 64 deaths.
- Teams concluded that 66 percent of the 64 suicides were preventable, 12 percent were not preventable, and the teams were unable to determine preventability for 22 percent.

**Suicides by Hour of Injury  
Washington Ages 0-17, 1999-2001**





# CHILD ABUSE & NEGLECT



## Summary

One-fifth of Washington adults report some history of childhood physical or sexual abuse, equivalent in 2002 to an estimated 800,000-1,000,000 adults. Only a portion of this abuse is reported to Child Protective Services (CPS). In 2001 there were 38,275 accepted referrals<sup>1</sup> to CPS for child abuse and neglect in Washington, involving 45,420 different children (equivalent to 30 children in accepted referrals per 1,000 children).

Studies suggest that in addition to causing direct suffering, child abuse has long-term implications for poor health outcomes, including effects on physical and emotional well-being and increased risk for delinquency, substance abuse, adolescent pregnancy, suicide attempt, and sexual-risk behaviors for increased risk of HIV.

Home visiting by a nurse to high-risk families during pregnancy and infancy reduced maltreatment over a 15-year period in one study. There is a need for more accurate measures and for development and evaluation of long-term, multifaceted programs that are effective in preventing and treating child abuse.

## REAL STORIES OF ABUSE DEATHS INVOLVING WASHINGTON CHILDREN

*Eleven-month-old Taylor died of an abusive head injury from being shaken and thrown against the wall by a parent because she would not stop crying.*

*Cody, age 4, was beaten to death with the butt of a handgun by a family friend who was using illicit drugs at the time.*

*Alex, age 1, died from being beaten by the boyfriend of his mother. He was noted to have multiple bruises all over his body as well as old cigarette burns on his feet. The family had a history of referrals to CPS.*

<sup>1</sup> An accepted referral is a referral to Child Protective Services that passed an initial screening to determine whether investigation is required. One accepted referral could include multiple children in a home.

- Provide sensitive, responsive care to children. Caregivers should spend time with their children doing activities together that are meaningful. Caregivers should listen to their children and be aware of their interests, activities, and friends.
- Attend parenting classes and support groups to learn about child development, gain non-punitive discipline and guidance skills, learn techniques for managing family life and reducing stress, and connect with other parents who share similar experiences.
- Discipline should be done thoughtfully. Remember that discipline is a way to teach children. Privileges can be used to encourage good behavior and time-outs can be used to help children regain control. Negative control tactics such as yelling, insulting, threatening, and spanking can increase defiant behaviors.
- Promote peaceful resolutions to conflict by being a good role model.
- Teach children their rights. Children should know that they have a right to be safe and that abuse is not their fault.
- Any person who has reasonable cause to believe that a child has suffered abuse or neglect should report suspected abuse to Child Protective Services (1-800-END-HARM).
- More information is available at [www.wcpca.wa.gov](http://www.wcpca.wa.gov).

- Provide public education about what abuse is, how to recognize abuse, and how to report it. Information is available from the Washington Council for Prevention of Child Abuse and Neglect ([www.wcpcan.wa.gov](http://www.wcpcan.wa.gov)) and Child Welfare League of America ([www.cwla.org](http://www.cwla.org)).
- Any person, who has reasonable cause to believe that a child has suffered abuse or neglect, may report, in good faith, such incidents to law enforcement or the Child Protective Services (1-800-END-HARM).
- People in the community required by state law (RCW 26.44.030) to report child abuse or neglect include:
  - Medical practitioners and licensed health service providers.
  - Professional school personnel (including, but not limited to, teachers, counselors, administrators, child care facility personnel, and school nurses).
  - "Social services counselors" (anyone engaged in a professional capacity during the regular course of employment in encouraging or promoting the health, welfare, support, or education of children, or providing social services to adults or families, including mental health, drug and alcohol treatment, and domestic violence programs).
  - Licensed or certified childcare providers or their employees.
  - Coroners, medical examiners, and licensed pathologists.
  - Registered pharmacists.
  - Department of Social and Health Services employees.
  - Law enforcement officers, juvenile probation officers, and Department of Corrections employees who become aware of possible child abuse or neglect during the course of their employment.
- Staff of responsible living skills programs or HOPE centers (temporary residential placements for street youth).
- Staff or volunteers in the state family and children's ombudsman office<sup>2</sup>.
- Any adult who resides with a child suspected to have suffered severe abuse.
- Support efforts to educate and prevent Shaken Baby Syndrome. The Washington Council for Prevention of Child Abuse and Neglect's "Babies are Fragile" campaign ([www.wcpcan.wa.gov/sbscampaign.asp](http://www.wcpcan.wa.gov/sbscampaign.asp)) has developed materials that can be used for this purpose.
- Support programs to prevent abuse, to protect children from abuse that has occurred, and to mitigate the adverse effects of abuse on children's development.
  - Too often, intervention occurs only after abuse is reported. Support programs, such as home visits by nurses who provide assistance for newborns and their parents, which can stop abuse before it occurs.
  - Health care professionals can provide identification, screening, and referral for abused children.
  - Provide opportunities for abused children to attend therapeutic child care programs. Several programs of this type have shown positive effects on development, and they may prevent the intergenerational transmission of abuse.
  - Other programs that may be helpful in preventing or responding to abuse include mental health services and alcohol and drug treatment; support services, such as food banks, job training, crisis nurseries, respite care, emergency housing, and transportation; and parenting education.

<sup>2</sup> An ombudsman is an official who is designated to assist in overcoming the delay, injustice, or impersonal delivery of services.

## Introduction

Child abuse is a serious problem by any measure, but underreporting, varying definitions, changes in community perceptions over time, and other issues hinder accurate measurement.

Data on child abuse are limited because most cases are not coded as such on the death certificates or as a reason for hospitalization.

Washington State law defines child abuse as: "Abuse or neglect" means the injury, sexual abuse, sexual exploitation, negligent treatment, or maltreatment of a child by any person which indicate that the child's health, welfare, and safety is harmed (RCW 26.44.020).

## Findings From Washington CPS and Survey Data

- CPS records indicate that in 2001, 30 per 1,000 children statewide were involved in referrals that were accepted for child abuse and neglect investigation.
- Data from the 2002 Washington Healthy Youth Survey show that about 16-18 percent of youth in eighth, tenth, and twelfth grades reported being physically abused by an adult at some point in their lives. In a similar survey in 1995, about 14-18 percent reported being sexually abused.
- Data from the 2002 Washington Behavioral Risk Factor Surveillance System (BRFSS) show that about 11 percent of adults reported being physically abused as children, and 12 percent reported being sexually abused.

## Time Trends

Comparable data are not available for time trend analysis<sup>3</sup>.

## Age and Gender

The rates of children in CPS-accepted referrals in 2001 were similar for males (29.6 per 1,000 children) and females (30.8 per 1,000 children).

The rates of children in CPS-accepted referrals in 2001 were the highest for children 0-5 years old (37.5 per 1,000), followed by children 6-11 years old (30.8 per 1,000), and children 12-17 years old (19.3 per 1,000).

According to data from the 2002 Washington Behavioral Risk Factor Surveillance System, females are about three times more likely to report a history of childhood sexual abuse compared to males, and females are as likely as males to report physical abuse during their childhood.

### Self-Reported History of Abuse as a Child Washington 2002

	Adult Females <sup>4</sup>	Adult Males
Sexual Abuse <sup>5</sup>	18.3% ± 1.8%	5.7% ± 1.1%
Physical Abuse	11.2% ± 1.4%	11.3% ± 1.8%

National 2001 CPS data suggest that children 0-3 years old are at the greatest risk of any abuse, and reported abuse declines with the age of the child.

<sup>3</sup> See Trend Analysis section in Appendix D.

<sup>4</sup> Ages 18 and over.

<sup>5</sup> Sexual abuse includes those adult respondents reporting they were

sexually abused and those reporting they were both physically and sexually abused. Physical abuse includes those reporting they were physically abused and those who were both physically and sexually abused.

Local child death review teams reviewed 882 unexpected child deaths during 1999-2001. After examining the circumstances surrounding the child's death, local teams concluded whether the abuse or neglect was a direct factor in the death.<sup>6</sup> A team's conclusion that abuse or neglect was a factor in a child's death can be more subjective than the strict legal definitions used in a court of law, and may reflect a community standard rather than a legal one.

Key findings include:

- For 165 deaths (19 percent), either physical abuse or neglect was cited by the local teams as a contributing factor in the child's death. Physical abuse was cited in 36 (4 percent) of the deaths and neglect was cited as a factor in 143 (16 percent) of the deaths.<sup>7</sup>

**Child Death Where Abuse and/or Neglect Cited as a Factor  
Washington 1999-2001**

Manner of Death	Number of Deaths Reviewed	Number with Abuse and/or Neglect Cited as a Factor in the Death	Percent with Abuse and/or Neglect Cited as a Factor in the Death
Non-Injury	355	33	9
Unintentional Injury	370	80	22
Suicide	64	11	17
Homicide	67	35	52
Undetermined	26	6	23
<b>Total</b>	<b>882</b>	<b>165</b>	<b>19</b>

- For 36 deaths in which physical abuse was cited, 30 (83 percent) were homicides, four deaths (11 percent) were due to unintentional injury, one (3 percent) was a suicide, and one (3 percent) was undetermined.

Abuse was cited in non-homicide deaths if the teams felt it contributed directly to the child's death.

- For the 30 homicides in which physical abuse was cited as a factor, the person inflicting the injury was a parent in 15 (50 percent), a parent's boyfriend or girlfriend in five (17 percent), a relative or friend in six (20 percent) and an other person in four (13 percent).
- Fifty-four (33 percent) of the 165 physical abuse and/or neglect deaths involved a child with a known history of abuse or neglect, and 48 (29 percent) of the deaths were in families with a known history of domestic violence.
- The majority (70 percent) of the 165 deaths where abuse or neglect was cited as a factor were to children less than 10 years old.
- Impairment by or use of alcohol and/or other drugs by one or more persons was cited as a factor in 41 (25 percent) of the 165 physical abuse and/or neglect deaths. In seven deaths, the child was impaired; for 21, the caretaker was impaired; and for 19, impairment was by a third party such as the perpetrator or a parent's partner.<sup>8</sup>
- Teams reported that 135 (82 percent) of the 165 deaths were preventable, eight (5 percent) were not preventable, and teams were unable to determine preventability in 22 (13 percent) of the deaths. Twenty (67 percent) of the 30 deaths where teams reported the death was not preventable or they were unable to determine preventability were deaths due to unintentional injury or non-injury causes.

<sup>6</sup> Guidance on determining abuse and neglect is included in instructions to the team and are based on definitions from the Department of Social and Health Services (see Appendix D for definitions).

<sup>7</sup> Some deaths had both abuse and neglect cited as factors in the child's death.

<sup>8</sup> Persons impaired may total more than the number of deaths because more than one party could have been impaired.

# OCCUPATIONAL



## REAL STORIES OF OCCUPATIONAL DEATHS INVOLVING WASHINGTON CHILDREN

*Matt, a 16-year-old boy working at a wrecking yard, was struck and killed when a hoist holding a load with an engine suspended, tipped over and hit him in the head.*

*Chris and Jim, two 16-year-olds, were working on a dairy farm, and suffocated when they entered a silo filled with hay. The incident occurred after the silo had been filled and sealed for almost three days.*

## Summary

Adolescents under the age of 18<sup>1</sup> in Washington State and nationwide are injured in the workplace at twice the rate of adults. Among Washington minors (11-17 years old), there are approximately 2,500 accepted worker compensation referrals to the Department of Labor & Industries each year.<sup>2</sup> Over a 16-year span, 1988-2003, there were 13 work-related fatalities among Washington youth. The leading cause of occupational injury death among Washington youth is agricultural machinery.

Nationally, about one-third of teens that are injured at work are injured seriously enough to require treatment in a hospital emergency department.

Prevention strategies include:

- Educating parents, teens and employers about restrictions for hazardous work and restricted work hours for minors.
- Educating teens about their right to a safe and healthy workplace.
- Educating teens about their right to refuse to do dangerous work.
- Enforcement of child labor and safety regulations are also important in preventing these injuries.

<sup>1</sup> The majority are 16-17 years old, although children as young as 12 are allowed to work in some agriculture settings.

<sup>2</sup> A work-related injury that requires more than first aid should be reported as a claim for industrial insurance, also known as workers' compensation, to cover costs for medical care, lost work time, or

both. There are approximately 8 percent more claims that are reported to the system but are not accepted for various reasons. In addition, due to issues related to underreporting, it is estimated that claims reported to workers' compensation programs may under-represent the actual number of workplace injuries.



- All employers are required to have a Minor Work Permit to hire minors, and a permission slip, known as a Parent/School Authorization Form, signed by the parent and by the school while it is in session. Parents should be aware that they need to sign this form giving permission for their teen to work, and to be sure that the employer is aware of the laws protecting them.
- Parents and teens should be aware that there are restrictions for hazardous work for minors and restricted work hours. This information is available at [www.Lni.wa.gov/workplacerrights/teenworkers](http://www.Lni.wa.gov/workplacerrights/teenworkers).
- Parents and teens should be aware that the minimum age for minors to work is 14. The number of hours per week, starting and quitting times, and work activities are more limited for 14- and 15-year-olds. The hours of work also differ for all minors while school is in session.
- Teens should know their rights, which include the right to a safe and healthy workplace, and the right to refuse to do dangerous work. Teens should know what work activities they are not permitted to perform. They should know that they can decline to do a task that they have not been trained to do. They should be encouraged to ask the following questions in any job:
  - What are the hazards and dangers of my job?
  - What are my health and safety responsibilities?
  - Will I receive job safety training and information on any safety gear I'll need to wear?
  - Who do I ask if I have a health and safety question?
  - What do I do if I get hurt?
- More information regarding youth safety resources and hiring minors is available at [www.Lni.wa.gov/WorkplaceRights/TeenWorkers](http://www.Lni.wa.gov/WorkplaceRights/TeenWorkers); by calling 360-902-5316 (Olympia); or by calling a local Labor & Industries office found in the blue government section of the white pages. Questions can also be sent by email to [teensafety@Lni.wa.gov](mailto:teensafety@Lni.wa.gov).

PREVENTION STRATEGIES FOR COMMUNITIES

OCCUPATIONAL

- Encourage high schools and job training and placement programs to integrate curricula about workplace safety and teens' on-the-job rights.
- A research study in three communities indicated the following community-based approaches are promising strategies for preventing workplace injuries to minors:
  - Develop community coalitions comprised of business associations, labor groups, schools, job placement and training programs, youth-advocacy groups, teen organizations, government agencies, health care providers, and family members.
  - Encourage community coalitions to provide information to employers on the regulations for hiring minors, including the need to have a minor work endorsement or permit, the importance of providing training when a young worker is new to a job, and the need to provide periodic retraining and ongoing supervision.
  - Conduct an assessment of the community to determine the extent and nature of local teen employment and workplace injury. Based on the composition of the types of industries in the community, target outreach measures based on the potential job activities and hazards teens are likely to encounter.
  - Provide training and educational resources to members of the community so all are informed about the major issues concerning young workers.
  - Assess teen attitudes towards work and workplace safety and health issues through the use of surveys or focus groups, and promote peer education programs to address workplace safety and health issues.

## Number of Injuries

Teens in Washington State and nationwide, are injured in the workplace at a rate two times higher than adults. Among Washington minors (11-17 years old), there are approximately 2,500 accepted worker compensation referrals to the Washington State Department of Labor & Industries each year. During 1988-2003, there were 13 work-related deaths among Washington youth.

## Cause of Injuries

Most adolescent occupational injuries occur in the retail sector, primarily restaurants and grocery stores where most teens are employed. Other workplaces where teens are injured include hotels and motels, healthcare, construction, manufacturing, and agriculture. Almost 50 percent of injuries occur during the first six months on the job. Some injuries occur in situations that violate Washington's child labor regulations, such as when youth are performing prohibited duties. However, most injuries occur in job duties allowed under the child labor regulations.

There are a number of reasons teen workers are more likely to be injured on the job: they lack experience, are eager to please, and are often performing hazardous work. They are often unaware of the child labor laws, feel hesitant to ask questions or speak up about health and safety concerns, and frequently do not receive adequate supervision or occupational safety and health training. Developmentally, they may be physically and cognitively unprepared for the tasks they are asked to do. In addition, they are risk-takers lacking a sense of vulnerability that may place them in jeopardy in the work environment.

## Type of Non-fatal Injuries

The most common types of injuries include slips and falls, strains and sprains, burns, and lacerations. More severe injuries include fractures, concussions, dislocations, amputations, and multiple injuries.

## Time Trends

The average number of accepted worker compensation claims for injured minors (11-17 years old) in Washington State and nationally has been declining over time. In Washington, the average number of claims was about 4,500 per year during 1988-1991, about 2,900 per year in 1992-1996, and about 2,200 per year during 1997-2002. The reasons for this decline have not been identified.

## Intent

All Washington State workplace injuries described above were unintentional.

## Age and Gender

In 1990, the occupational injury rate for adolescent males in Washington State was twice that found for adolescent females. This is consistent with current national data. Over the past 11 years through 2002, the difference in the injury rate for boys and girls has narrowed. However, boys continue to be injured at work about 40 percent more than girls.

About 95 percent of injuries occurred among youth 16-17 years old.

## Death Summary

During 1988-2003 there were 13 deaths. All were males. Five died from motor vehicle crashes, two from machinery, two from suffocation, two from being struck by or against an object, one from a fall, and one from drowning.

# *INJURY BY AGE GROUP*



# UNDER 1 YEAR OLD



## Summary

Injury is the fifth leading cause of death for Washington children under 1 year old. Suffocation was the leading cause of injury-related death, and falls were the leading cause of injury-related hospitalization for infants.

## Introduction<sup>1</sup>

During 1999-2001, an average of 428 Washington State infants died each year. Although children under 1 year old are more likely to die from natural causes such as congenital malformations, sudden infant death syndrome, and complications from short gestation, injuries do impact this vulnerable population. During 1999-2001, injuries among Washington children under 1 year old were responsible for an annual average of:

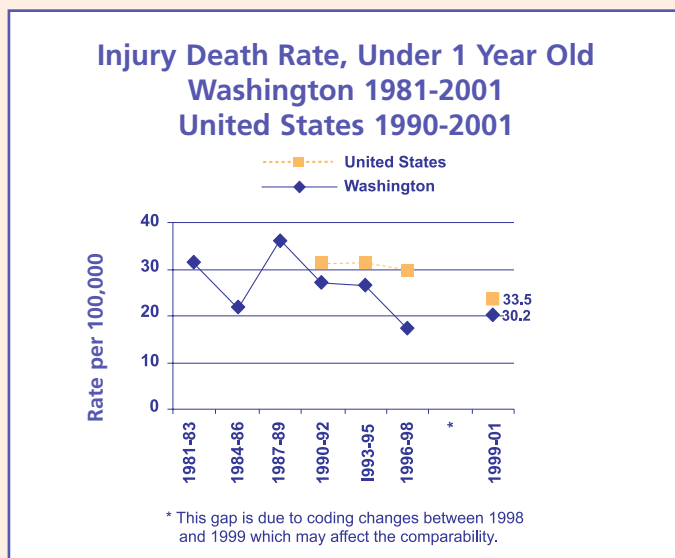
- 21 deaths
- 153 hospitalizations.
- About 5,000 visits to hospital emergency departments, or about one out of every 16 children under 1 year old.

<sup>1</sup> Unless otherwise specified, data are for injuries among Washington resident children under 1 year old during 1999-2001. Rates are per 100,000 children under 1 year old who are Washington residents.

## Time Trends<sup>2</sup>

There was little change in the injury death rates for Washington children under 1 year old, from the three year time period of 1981-83 to 1999-2001.

Since 1990<sup>3</sup>, Washington death rates for children under 1 year old have been lower than those nationally.

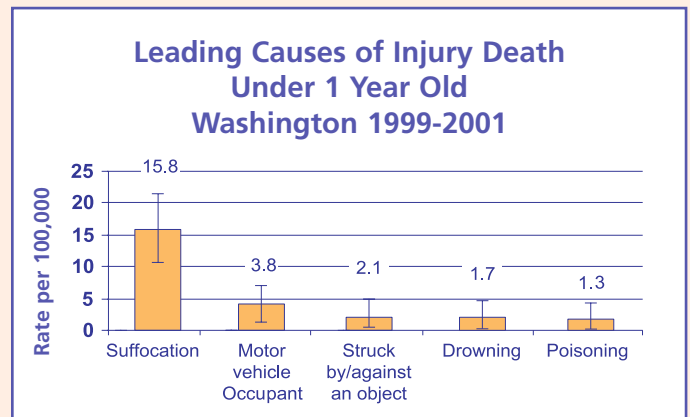


## Intent

The majority of injury deaths (84 percent) and hospitalizations (98 percent) in Washington infants were classified as unintentional.

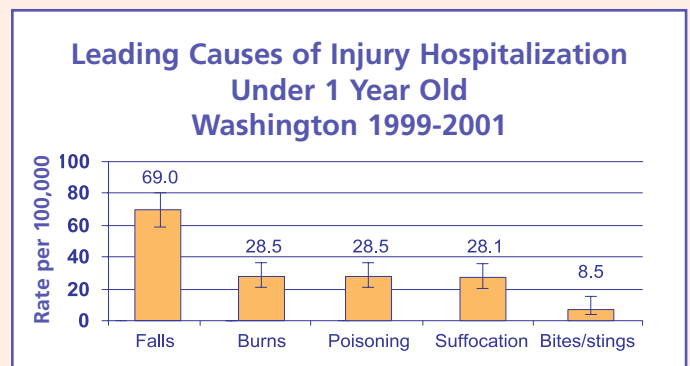
## Leading Cause of Death<sup>4</sup>

Suffocation was the leading cause of injury-related death for Washington infants.



## Leading Cause of Hospitalization<sup>5</sup>

Falls were the leading cause of injury-related hospitalization for Washington infants.



For prevention strategies, see chapters on suffocation, fall injury, motor vehicle occupant injury, fire and burn injuries, drowning, and poisoning.

<sup>2</sup> See Comparability Ratio section in Appendix D.

<sup>3</sup> National injury death rates for children under 1 year old are not available prior to 1990.

<sup>4</sup> Struck by or against an object is defined as an injury resulting from being struck by or striking against objects or persons.

<sup>5</sup> Bites and stings are defined as an injury caused by bites and stings of venomous and non-venomous insects and other animals.

# 1-4 YEARS OLD



## Introduction<sup>1</sup>

Injury is the leading cause of death of Washington children 1-4 years old. During 1999-2001, injuries among Washington children in this age group were responsible for an annual average of:

- 31 deaths.
- 516 hospitalizations.
- About 46,300 visits to a hospital emergency department, or about one out of every seven children 1-4 years old.

## Summary

Injury is the leading cause of death of Washington State children 1-4 years old. Motor vehicle crashes were the leading cause of injury-related death, and falls were the leading cause of injury-related hospitalization for children 1-4 years old. The injury-related death rate for Washington children 1-4 years old decreased by about 52 percent during 1981-2001.

<sup>1</sup> Unless otherwise specified, data are for injuries among children 1-4 years old during 1999-2001. Rates are per 100,000 children 1-4 years old who are Washington residents.



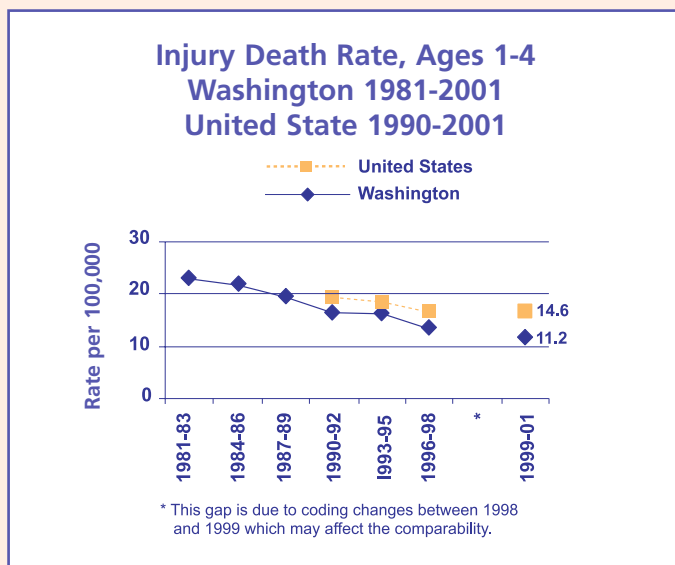
## Time Trends<sup>2</sup>

For the three-year time period of 1981-83 to 1999-2001, the injury death rate for Washington children 1-4 years old declined significantly from 23.2 to 11.2 per 100,000. This represents about a 52 percent decrease in the injury-related death rate for this age group.

Since 1990<sup>3</sup>, Washington death rates for children 1-4 years old have been slightly lower than those nationally.

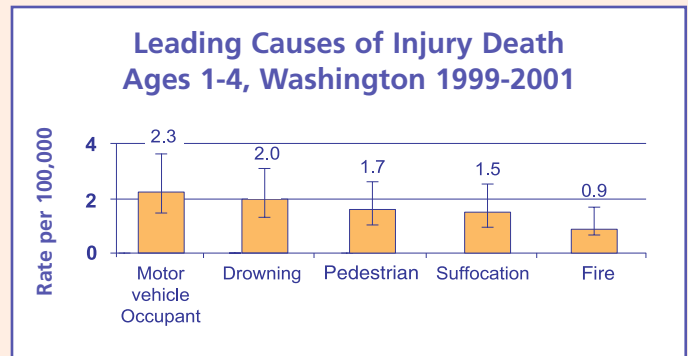
## Intent

The majority of injury deaths (94 percent) and hospitalizations (95 percent) were unintentional.



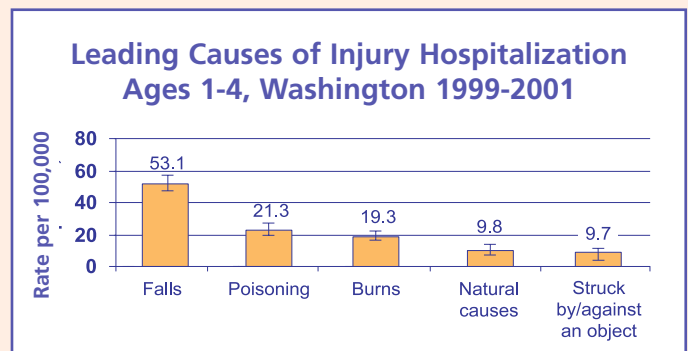
## Leading Cause of Death

Motor vehicle crashes were the leading cause of injury-related death for Washington children 1-4 years old. Drowning closely followed motor vehicle crashes as the second-leading cause.



## Leading Cause of Hospitalization<sup>4</sup>

Falls were the leading cause of injury-related hospitalization for Washington children 1-4 years old.



For prevention strategies, see chapters on motor vehicle occupant injury, injury due to falls, drowning, poisoning, fire and burn injuries, pedestrian injury, and suffocation.

<sup>2</sup> See Comparability Ratio section in Appendix D.

<sup>3</sup> National injury death rates for children 1-4 years old are not available prior to 1990.

<sup>4</sup> Natural causes are defined as injuries caused by excessive exposure to heat, cold, or weather conditions; hunger; or cataclysmic storms (tornados, floods, and hurricanes) or land movement (earthquakes, land slides, avalanches, and tidal waves). Struck by or against an object is defined as an injury resulting from being struck by or striking against objects or persons.

# 5-9 YEARS OLD



## Introduction<sup>1</sup>

Injury is the leading cause of death of Washington children 5-9 years old. During 1999-2001, injuries among Washington children 5-9 years old were responsible for an annual average of:

- 26 deaths.
- 537 hospitalizations.
- About 45,950 visits to a hospital emergency department, or about one out of every nine children 5-9 years old.

## Summary

Injury is the leading cause of death for Washington State children 5-9 years old. Motor vehicle crashes were the leading cause of injury-related death, and falls were the leading cause of injury-related hospitalization for this age group. The injury-related death rate for Washington children in this age group decreased by about 48 percent during 1981-2001.

<sup>1</sup> Unless otherwise specified, data are for injuries among children 5-9 years old during 1999-2001. Rates are per 100,000 children 5-9 years old who are Washington residents.

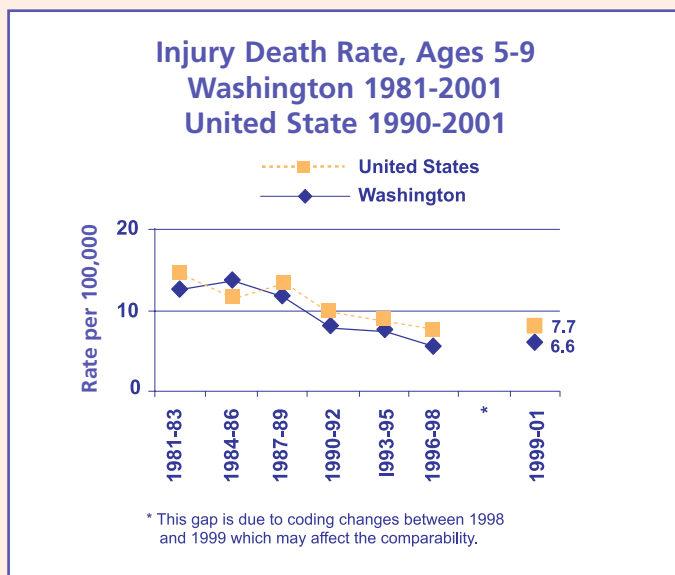
## Time Trends<sup>2</sup>

From the three-year time period of 1981-83 to 1999-2001, the injury death rate for Washington children 5-9 years old declined significantly from 12.8 to 6.6 per 100,000. This represents about a 48 percent decrease in the injury-related death rate for this age group.

Injury death rates in Washington were slightly lower than national rates from the three-year time period of 1981-83 to 1999-2001.

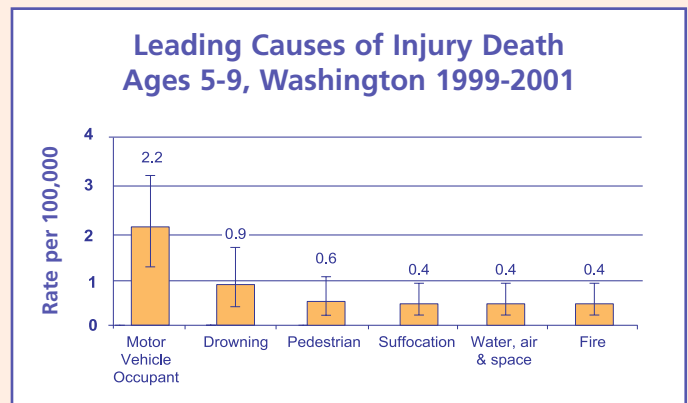
## Intent

The majority of injury deaths (87 percent) and hospitalizations (99 percent) were unintentional.



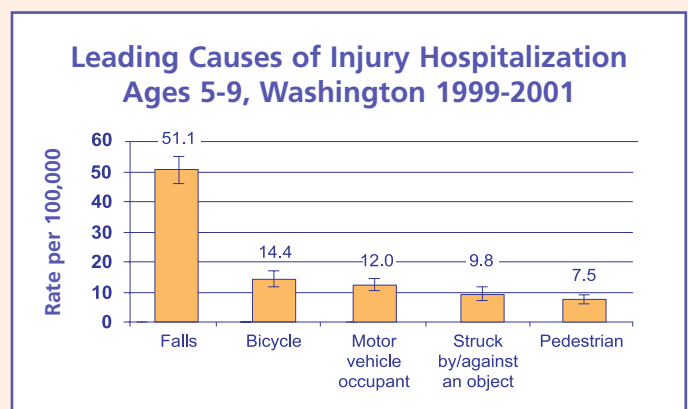
## Leading Cause of Death<sup>3</sup>

Motor vehicle crashes were the leading cause of injury-related death for Washington children 5-9 years old.



## Leading Cause of Hospitalization<sup>4</sup>

Falls were the leading cause of injury-related hospitalization for Washington children 5-9 years old.



For prevention strategies, see chapters on motor vehicle occupant injury, injury due to falls, drowning, bicycle injury, pedestrian injury, suffocation, and fire and burn injuries.

<sup>2</sup> See Comparability Ratio section in Appendix D.

<sup>3</sup> Water, space and air is defined by an injury associated with watercraft or aircraft, except those caused by drowning associated with boats.

<sup>4</sup> Struck by or against an object is defined as an injury resulting from being struck by or striking against objects or persons.

# 10-14 YEARS OLD



## Introduction<sup>1</sup>

Injury is the leading cause of death of Washington children 10-14 years old. During 1999-2001, injuries among Washington children in this age group were responsible for an annual average of:

- 38 deaths.
- 810 hospitalizations.
- About 58,350 visits to a hospital emergency department, or about one out of every eight children 10-14 years old.

## Summary

Injury is the leading cause of death for Washington State children ages 10-14. Motor vehicle crashes were the leading cause of injury-related death, and falls were the leading cause of injury-related hospitalization for children in this age group. The injury-related death rate for Washington children 10-14 years old decreased by about 43 percent during 1981-2001.

<sup>1</sup> Unless otherwise specified, data are for injuries among children 10-14 years old during 1999-2001. Rates are per 100,000 children 10-14 years old who are Washington residents.

## Time Trends<sup>2</sup>

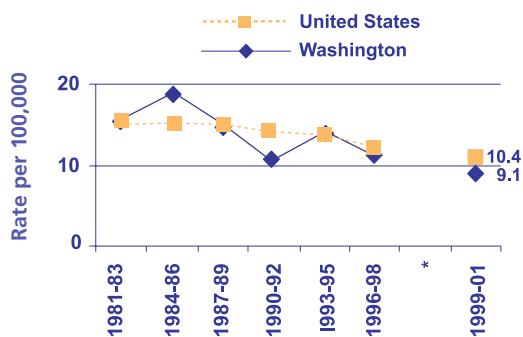
From the three-year time period of 1981-83 to 1999-2001, the injury death rate for Washington children 10-14 years old declined significantly from 15.9 to 9.1 per 100,000. This represents about a 43 percent decrease in the injury-related death rate for this age group.

Injury death rates for Washington children 10-14 years old were similar to national rates from the three-year time period of 1981-83 to 1999-2001.

## Intent

The majority of injury deaths (76 percent) and hospitalizations (86 percent) were unintentional. About 12 percent of deaths and hospitalizations were the result of a self-inflicted injury.

**Injury Death Rate, Ages 10-14  
Washington 1981-2001  
United States 1990-2001**

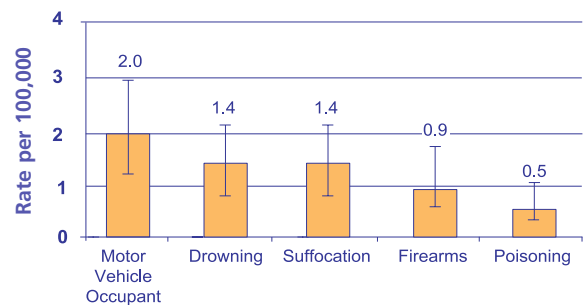


\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

## Leading Cause of Death

Motor vehicle crashes were the leading cause of injury-related death for Washington children 10-14 years old.

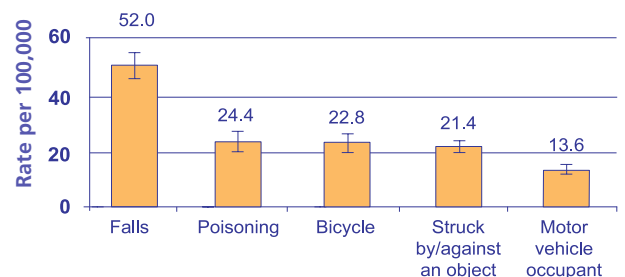
**Leading Causes of Injury Death  
Ages 10-14, Washington 1999-2001**



## Leading Cause of Hospitalization<sup>3</sup>

Falls were the leading cause of injury-related hospitalization for Washington children 10-14 years old.

**Leading Causes of Injury Hospitalization  
Ages 10-14, Washington 1999-2001**



For prevention strategies, see chapters on motor vehicle occupant injury, injury due to falls, drowning, poisoning, suffocation, bicycle injury, suicide, and firearm injury.

<sup>2</sup> See Comparability Ratio section in Appendix D.

<sup>3</sup> Struck by or against an object is defined as injuries resulting from being struck by or striking against objects or persons.

# 15-17 YEARS OLD



## Introduction<sup>1</sup>

Injury is the leading cause of death of Washington teens. During 1999-2001, injuries among Washington teens were responsible for an annual average of:

- 87 deaths.
- 980 hospitalizations.
- About 38,650 visits to a hospital emergency department, or about one out of every seven children 15-17 years old.

## Summary

Injury is the leading cause of death of Washington State teens 15-17 years old. Motor vehicle crashes were the leading cause of injury-related death, and poisoning was the leading cause of injury-related hospitalization for teens. The injury-related death rate for Washington teens decreased by about 39 percent during 1981-2001.

<sup>1</sup> Unless otherwise specified, data are for injuries among children 15-17 years old during 1999-2001. Rates are per 100,000 children 15-17 years old who are Washington residents.



## Time Trends<sup>2</sup>

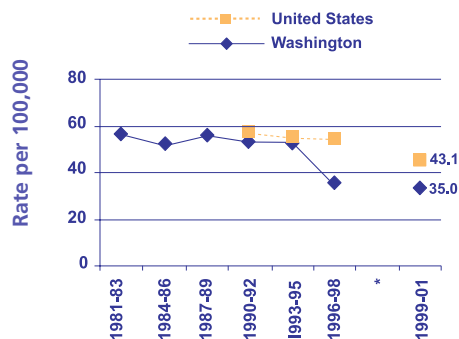
From the three-year time period of 1981-83 to 1999-2001, the injury death rate for Washington children 15-17 years old declined significantly from 56.9 to 35.0 per 100,000. This represents about a 43 percent decrease in the injury-related death rate for this age group.

Since 1990<sup>3</sup>, Washington death rates for children 15-17 years old have been lower than those nationally.

## Intent

The majority of injury deaths (66 percent) and hospitalizations (69 percent) were unintentional. About 20 percent of deaths and hospitalizations were the result of self-inflicted injury.

**Injury Death Rate, Ages 15-17  
Washington 1981-2001  
United State 1990-2001**

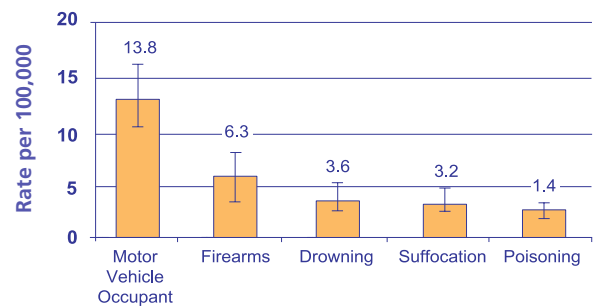


\* This gap is due to coding changes between 1998 and 1999 which may affect the comparability.

## Leading Cause of Death

Motor vehicle crashes were the leading cause of injury-related death for Washington teens 15-17 years old.

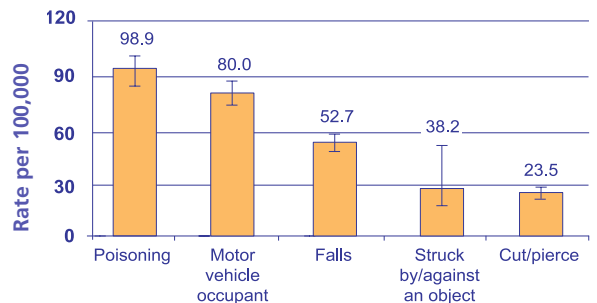
**Leading Causes of Injury Death  
Ages 15-17, Washington 1999-2001**



## Leading Cause of Hospitalization<sup>4</sup>

Poisoning was the leading cause of injury-related hospitalization for Washington teens 15-17 years old.

**Leading Causes of Injury Hospitalization  
Ages 15-17, Washington 1999-2001**



For prevention strategies, see chapters on motor vehicle occupant injury, suicide, poisoning, drowning, and firearm injury.

<sup>2</sup> See Comparability Ratio section in Appendix D.

<sup>3</sup> National injury death rates for children 15-17 years old are not available prior to 1990.

<sup>4</sup> Struck by or against an object is defined as an injury resulting from being struck by or striking against objects or persons. Cut or pierce is defined as an injury caused by cutting and piercing instruments.

### How to Read this Report

This report uses a number of epidemiological methods and technical terms to analyze data on childhood injury. The following definitions and explanations will assist the reader.

#### Epidemiology

Epidemiology is the study of the distribution and determinants of health conditions in a specified population and the application of this study to the control of health problems.

#### Rate per 100,000

Using the Washington State childhood death rate as an example, this is the total number of deaths to children in a specified time period divided by the total population of children in Washington State in that same time period, and then multiplied by 100,000. The resulting rate is the number of deaths occurring in a group of 100,000 children in Washington State during the specified time period.

Rates are useful because they account for the fact that the number of injuries depends in part on the number of people in the population of interest. For example, from 1997-2001, there were 40 injury-related deaths among children 0-17 years old in Kitsap County and 216 such deaths in King County during the same time period. The higher number of childhood injury-related deaths in King County could be explained by the higher number of children who live in King County. The rates of childhood injury-related death in these two counties (12.8 per 100,000 in Kitsap County and 11.0 per 100,000 in King County) is similar because the rate accounts for the total number of children in the population of each county.

#### Specific Rates

*Age specific rates* are rates calculated for a specific age group; the numerator and denominator refer to the same age group.

*Gender specific rates* are rates calculated for each gender separately; the numerator and denominator refer to the same population.

*Region specific rates* are rates calculated by region of the state; the numerator and denominator refer to the same population.

*Age-adjusted rates* are rates that have been adjusted to minimize the effects of differences in age composition when comparing rates for different populations. Age-adjusted rates were used in this report when comparing children who live in urban settings to those in rural settings. This was necessary because there are more young children (ages 0-4) and fewer teens (ages 15-17) in urban settings, and visa versa in rural settings. The age-adjustment corrects for this difference.

Age-adjustment was considered for the time trend analysis, however there was very little difference in age composition for Washington children between 1981 and 2001. Therefore, the age adjusted time trends would have been very similar to the unadjusted trends.

#### Significant Trend

For the time trend analyses in this report, the "joinpoint" methodology developed by the National Cancer Institute was used. Information on this method is available at [srab.cancer.gov/joinpoint](http://srab.cancer.gov/joinpoint). A significant trend indicates that the change in the rate is not random and that the increase or decrease is likely to be occurring in a population. The significance level used for a significant trend is  $p < 0.05$ .

#### Bar Charts with Rates and Confidence Intervals

The following is important to note when reading the bar charts in this report. The top of the bar represents the actual value of the rate, and the numerical value on top of the bar is the rate. The black line marked with two endpoints at the top of each bar represents the 95 percent confidence interval of the rate. We expect the true rate to fall within the confidence interval 95 percent of the time. When comparing two rates with each other and the confidence intervals overlap, the rates are not considered to differ statistically from each other.

## **Preventability (Child Death Review Definition)**

Local CDR teams used the following guidance when determining preventability:

"If a reasonable medical, educational, social, legal or psychological intervention could have prevented this death from occurring, the death is regarded as preventable. A "reasonable" intervention is one that would have been possible

given the known conditions or circumstances and the resources available." The preventability data in this report excludes missing data from the denominator for the following chapters:

- Suffocation – one child or 1 percent.
- Firearm – three children or 5 percent.
- Motor vehicle occupant – 13 children or 10 percent.
- Fire/burn – three children or 12 percent.

## APPENDIX B

### Data Sources

#### Death Certificate System

##### *Description of the Data*

The Washington State Death Certificate System gathers information about each death that occurs in Washington State. Similar information is collected for residents of Washington State who die in another state or country. Thus, the Death Certificate System contains records on all deaths occurring in the state and all deaths to residents of the state.

Funeral directors collect information about the decedent from an informant (usually a family member or close personal friend of the decedent). Cause-of-death information is generally provided by a certifying physician, medical examiner, or coroner.

The major purposes of the death system are to:

- Provide a death record for purposes such as establishing inheritance and disposition of human remains.
- Record information about causes of death, injuries, occupation, and age which can be used by data analysts to help prolong the lives of residents of Washington State. For more information about what data are collected on the Washington State Death Certificates, visit [www.doh.wa.gov/EHSPHL/CHS/CHS-Data/death/deatmain.htm](http://www.doh.wa.gov/EHSPHL/CHS/CHS-Data/death/deatmain.htm) (Washington State Department of Health death certificates Web page).

Classification and coding of data on Washington death records follow the National Center for Health Statistics (NCHS) guidelines as defined in *Vital Statistics Instruction Manuals* parts 1-20 (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics, Hyattsville, MD). From 1980-1998, data was coded using ICD-9 codes, and the data from 1999-2001 was coded using ICD-10 codes. For more information on the International Classification of Disease (ICD) codes used in the death certificates, visit [www.doh.wa.gov/ehsphil/chs/chsdata/TechNote/tech\\_not.pdf](http://www.doh.wa.gov/ehsphil/chs/chsdata/TechNote/tech_not.pdf) (Washington State Department of Health, death certificates/technical notes Web page).

##### *Use of the Data for this Report*

The Death Certificate System was used in every chapter of this report to identify the number of deaths related to childhood injury by cause and intent of injury. The cause and intent of each injury death were classified by either ICD-9 or ICD-10 code using the recommended framework listed in Appendix C.

#### Washington State Comprehensive Hospital Abstract Reporting System (CHARS)

##### *Description of the Data*

The CHARS database is used to collect public information such as the age, sex, zip code, and billed charges of the patient, as well as the codes for their diagnosis and procedures, among other items.

The purpose of the CHARS system is to provide public health personnel, consumers, purchasers, payers, providers, and researchers useful information by which to make informed decisions on health care. For more information, visit the Washington State Department of Health Web site at [www.doh.wa.gov/EHSPHL/hospdata/](http://www.doh.wa.gov/EHSPHL/hospdata/).

Classification and coding of CHARS data also follow the National Center for Health Statistics guidelines as defined in *Vital Statistics Instruction Manuals* parts 1-20 (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics, Hyattsville MD).

##### *Use of the Data for this Report*

CHARS data were used in every chapter of this report to identify the number of non-fatal hospitalizations related to childhood injury by cause and intent of injury. The cause and intent of each injury hospitalization were classified by ICD-9 code using the recommended framework listed in Appendix C.

## **National Emergency Department Data**

### *Description of the Data*

The national data are obtained from an expansion of the National Electronic Injury Surveillance System (NEISS) operated by the U.S. Consumer Product Safety Commission (CPSC). The expanded system, called the NEISS All Injury Program (NEISS-AIP), began on July 1, 2000, and collects data about all types and external causes of non-fatal injuries and poisonings treated in U.S. hospital emergency departments (EDs) – whether or not they are associated with consumer products. The NEISS All Injury Program (NEISS-AIP) is a collaborative effort by the National Center for Injury Prevention and Control (NCIPC) and CPSC. For more information about the national data, visit [www.cdc.gov/ncipc/wisqars/nonfatal/datasources.htm](http://www.cdc.gov/ncipc/wisqars/nonfatal/datasources.htm).

### *Use of the Data for this Report*

Emergency department data was used in every chapter of this report to provide an estimate of the number of injury-related visits to an emergency department among Washington's children. The estimates were based on national rates of emergency department visits applied to Washington's population.

## **Population Data**

### *Description of the Data*

The United States Constitution mandates a count of people living in the country every 10 years to determine how many seats each state will have in the House of Representatives. The census is also used for political redistricting, distribution of federal and state funds, and other governmental needs. The Bureau of the Census, located in the Department of Commerce, develops and mails census questionnaires to all known addresses where people might live, including housing units, hospitals, and hotels, in the United States and its territories.

Information is gathered by a *short form* sent to five out of six housing units and a long form sent to the remaining addresses. The short form asks basic questions, such as name, age, gender, and race of everyone in the household. The *long form* includes the questions on the short form, additional demographic questions, such as income and education, and questions about housing. Census takers visit housing units in rural and remote areas to drop off and pick up forms, and visit housing units that do not return census forms. Census workers also stage a one-day operation to obtain information on homeless persons and others who might be missed in the traditional enumeration of housing units and group quarters.

The primary purpose of intercensal interpolations is to provide a count of people in Washington between the decennial censuses. The Office of Financial Management (OFM) develops the intercensal interpolations using information from the decennial censuses, annual data on the number of births and deaths in Washington, and a variety of other data, such as housing starts, to estimate migration into and out of Washington. Both the federal census counts and the Washington intercensal estimates are also used by many other entities for a diversity of purposes, such as the denominator for calculating rates of health events. For more information about population data, visit [www.doh.wa.gov/HWS/doc/appendixB.doc#census](http://www.doh.wa.gov/HWS/doc/appendixB.doc#census).

### *Use of the Data for this Report*

Population data are used in every chapter of this report as the denominator for rate calculations.

## Urban and Rural Data

### *Description of the Data*

The urban and rural classifications were developed using a modification of the Rural Urban Commuting Area (RUCA) codes developed by U.S. Health Resources and Services Administration's Federal Office of Rural Health Policy and the U.S. Department of Agriculture's Economic Research Service. In the RUCA system, population size and commuting patterns are used to classify census tracts on a continuum from rural to urban.

In this report, counties were assigned a RUCA code by aggregating the population of census tracts within counties by RUCA code. Counties were classified as urban, suburban, large town rural, and small town rural by dominant RUCA code. Definitions of the four RUCA codes are as follows:

- Urban – Continuously built up areas 50,000 persons or more; these areas correspond to U.S. Bureau of the Census defined Urbanized Areas.
- Suburban – Areas with high commuting relationships with urban core areas.
- Large Town Rural – Towns with populations between 10,000 and 49,999 and surrounding rural areas with high commuting levels to these towns.
- Small Town Rural – Towns with populations below 10,000 and their commuter sheds and other isolated rural areas.

All rural-urban classification systems currently depend on 1990 commuting data. Until the 2000 commuting data are released, there is a potential for misclassification. More information on using rural-urban classification systems is available at [www.doh.wa.gov/Data/Guidelines/RuralUrban.htm](http://www.doh.wa.gov/Data/Guidelines/RuralUrban.htm).

### *Use of the Data for this Report*

Geographic comparisons were used in the introduction and motor vehicle chapter.

## Child Death Review (CDR) Data

### *Description of Data*

Washington's CDR data come from reviews submitted as of June 2003 to a state database by local CDR teams operating across the state. CDR is a process by which local communities establish a multi-disciplinary team representing public health, medical providers, law enforcement, school counselors, and other agencies and professions. Each team identifies circumstances leading to such deaths; collects and reports accurate, uniform information; improves interagency communication; and develops strategies to improve child health and safety. From 1998 through June 2003, 29 community-based CDR teams covered the entire state of Washington through contracts with 34 local health jurisdictions. Each contractor convened a multidisciplinary team (5-20 members) that reviewed *unexpected deaths of children from birth to 18 years* residing in that jurisdiction. A standardized data collection tool was used and submitted to the Washington State Department of Health. Unless otherwise noted, CDR data in this report includes unknowns and missing data. More information is available at [www.doh.wa.gov/cfh/mch/cahpc/cdr.htm](http://www.doh.wa.gov/cfh/mch/cahpc/cdr.htm).

### *Use of the Data for this Report*

CDR data was used in all of the cause of injury chapters to provide information related to the circumstances surrounding childhood injury deaths.



## Healthy Youth Survey (HYS) 2002

### *Description of Data*

The HYS is a collaborative effort between Washington State's Office of the Superintendent of Public Instruction, the Department of Health, the Department of Social and Health Service's Division of Alcohol and Substance Abuse, and the Office of Community Development. The HYS provides important information about adolescents in Washington. County prevention coordinators, community mobilization coalitions, community public health and safety networks, and others use this information to guide policy and programs that serve youth. The information from the HYS can be used to identify trends in the patterns of behavior over time. The state-level data can be used to compare Washington to other states that do similar surveys and to the nation. In the fall of 2002, students in grades 6, 8, 10, and 12 answered questions about safety and violence, physical activity and diet, alcohol, tobacco and other drug use, and related risk and protective factors. The HYS will next be administered in the fall of 2004. State level data are available at: [www3.doh.wa.gov/HYS/](http://www3.doh.wa.gov/HYS/).

### *Use of the Data for this Report*

HYS data was used in the chapters on drowning, firearms, bicycle, homicide and assault, suicide, and child abuse and neglect to provide information related to safety and violence.

## **Behavioral Risk Factor Surveillance System (BRFSS)**

### *Description of Data*

This is a national telephone survey of adults ages 18 and older that monitors modifiable risk factors for chronic diseases and other leading causes of death. For more information on the Washington State BRFSS, go to [www.doh.wa.gov/EHSPHL/CHS/CHS-Data/brfss/brfss\\_homepage.htm](http://www.doh.wa.gov/EHSPHL/CHS/CHS-Data/brfss/brfss_homepage.htm). For CDC BRFSS information, go to [www.cdc.gov/brfss](http://www.cdc.gov/brfss) (CDC Behavioral Risk Factor Surveillance System Web site).

### *Use of the Data for this Report*

BRFSS data was used in the chapters on firearms, and child abuse and neglect to provide information related to safety and violence.

## Child Protective Services (CPS)

### *Description of Data*

CPS is one of sections of the Division of Children and Family Services (DCFS) of the Washington State Department of Social and Health Services (DSHS). CPS is responsible for protecting children from abuse or neglect. CPS staff is required by law to investigate reports of suspected child abuse or neglect that meet the legal definition of child abuse or neglect. Data included in this report are accepted referral data. "Accepted referral" is a referral to Child Protective Services that passed an initial screening to determine whether investigation is required.

### *Use of the Data for this Report*

CPS data was used in the chapter on child abuse and neglect to estimate the number of accepted referrals from abuse or neglect among children in Washington.

## **Fatal Accident Reporting System (FARS)**

### *Description of Data*

FARS contains data on an annual census of fatal traffic crashes. To be included in FARS, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public, and must result in the death of an occupant of a vehicle or a non-motorist within 30 days of the crash. Data collected by FARS includes details about the crash, the vehicles involved, and the persons (including drivers) involved. For more information about FARS, go to [www.wtsc.wa.gov/fars.html](http://www.wtsc.wa.gov/fars.html).

### *Use of the Data for this Report*

FARS data was used in the chapter on motor vehicle occupants to provide information on the most common causes of fatal accidents and safety restraint use among subpopulations within Washington.

## E-code Matrix-ICD-9

**Classification of Injuries<sup>1</sup>** - Recommended framework of ICD-9 E-code groupings for presenting injury death and hospitalization data

Cause	Unintentional	Intentionally Self Inflicted	Assault	Undetermined	Legal Intervention
Cut/pierce	E920	E956	E966	E986	E974
Drowning/Submersion	E830, E832, E910	E954	E964	E984	
Falls	E880-E886, E888	E957	E968.1	E987	
Fire/burn	E890-E899, E924	E958.1, E958 (.2,.7)	E968.0, E961, E968.3	E988.1, E988 (.2,.7)	
Fire/flame	E890-E899	E958.1	E968.0	E988.1	
Hot object/Substance	E924	E958 (.2,.7)	E961, E968.3	E988 (.2,.7)	
Firearms	E922	E955 (.0-.4)	E965 (.0-.4)	E985 (.0-.4)	E970
Machinery	E919				
Motor vehicle traffic	E810-E819				
Occupant	E810-E819 (.0,.1)				
Motorcyclist	E810-E819 (.2,.3)				
Pedal cyclist	E810-E819 (.6)				
Pedestrian	E810-E819 (.7)				
Other	E810-E819 (.4,.5,.8)				
Unspecified	E810-E819 (.9)				
Pedal cyclist, other	E800-E807 (.3), E820-E825 (.6), E826 (.1,.9), E827-E829(.1)				
Pedestrian, other	E800-E807 (.2), E820-E825 (.7), E826-E829 (.0)				
Other land transport	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826 (.2-.8), E827-E829 (.2-.9)	E958.5	E968.5	E988.5	
Water/space/air	E840-E845, E831, E833 E838	E958.6		E988.6	
Natural/environment	E900-E909, E928 (.0-.2)	E958.3		E988.3	
Bites/stings	E905 (.0-.6,.9); E906 (.0-.4,.5,.9)				
Overexertion	E927				
Poisoning	E850-E869	E950-E952	E962	E980-E982	E972
Struck by/against	E916-E917		E960.0, E968.2		E973, E975
Suffocation	E911-E913	E953	E963	E983	
Other specified, classifiable	E846-E848, E914-E915, E918, E921, E922.4, E923, E925-E926, E928.3, E929 (.0-.5)	E955 (.5,.6,.9); E958 (.0,.4)	E960.1, E965 (.5-.9), E967, E968 (.4,.6,.7)	E985 (.5,.6), E988 (.0,.4)	E971, E978, E990 E994, E996, E997 (.0-.2)
Other specified, not elsewhere classifiable	E929.8, E928.8	E958.8, E959	E968.8, E969	E988.8, E989	E977, E995, E997.8, E998, E999
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9

Source: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

<sup>1</sup> Certain E-code categories are not considered to represent 'true' injuries, and are excluded from analysis. These include injuries due to medical misadventures, postoperative complications, and adverse effects of drugs, medicinal, and biological substances. A small

number of newborns that are coded as injured between birth and discharge from the hospital are also excluded. Hospital patients who die in the hospital are excluded from the hospitalization data, but included in the mortality data.

## E-code Matrix-ICD-10

**Classification of Injuries** - Recommended framework of ICD-10 E-code groupings for presenting injury death data

Cause	Unintentional	Intentionally Self Inflicted	Assault	Undetermined	Legal Intervention
Cut/pierce	W25-W29, W45	X78	X99	Y28	Y35.4
Drowning/Submersion	W65-W74, V90, V92	X71	X92	Y21	
Falls	W00-W19	X80	Y01	Y30	
Fire/burn	X00-X19	X76-X77	X97-X98	Y26-Y27	Y36.3
Fire/flame	X00-X09	X76	X97	Y26	Y36.3
Hot object/Substance	X10-X19	X77	X98	Y27	
Firearms	W32-W34	X72-X74	X93-X95	Y22-Y24	Y35.0
Machinery	W24, W30-31				
Motor vehicle traffic	Codes from 5 groups below				
Occupant	V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V81.1, V82.1, V83 V86 (.0-.3)				
Motorcyclist	V20-V28 (.3-.9), V29 (.4-.9)				
Pedal cyclist	V12-V14 (.3-.9), V19 (.4-.6)				
Pedestrian	V02-V04 (.1,.9),V09.2				
Other	V80 (.3-.5), V81.1, V82.1				
Unspecified	V87 (.0-.8), V89.2				
Pedal cyclist, other	V10-V11, V12-V14 (.0-.2), V15-V18, V19 (.0-.4,.8,.9)				
Pedestrian, other	V01, V02-V04 (.0), V05, V06, V09 (.0,.1,.3,.9)				
Other Land Transport	V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V81.1, V82.1, V83-V86 (.0-.3)	X82	Y03	Y32	
Water/space/air	V91, V93-V99				Y36.1
Natural/environment	W42, W43, W53-W64, W92-W99, X20-X39, X51-X57				
Bites/stings	W53-W59, X20-X29				
Overexertion	X50				
Poisoning	X40-X49	X60-X69	X85-X90	Y10-Y19	Y35.2
Struck by/against	W20-W22, W50-W52	X79	Y00, Y04	Y29	Y35.3
Suffocation	W75-W84	X70	X91	Y20	
Other specified and classifiable	W23, W35-W41, W44, W49, W85-W91, Y85	X75, X81, U03.0	X96, Y02,Y05-Y07, U01	Y25, Y31	Y35 (.1,.5),Y36 (.0,.2,.4-.8)
Other specified, not elsewhere classifiable	X58, Y86	X83, Y87.0	Y08, Y87.1	Y33, Y87.2	Y35.6,Y89 (.0,.1)
Unspecified	X59	X84, U03.9	Y09	Y34, Y89.9	Y35.7, Y36.9

Source: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

## Technical Notes

### Small Numbers

Presentation and interpretation of statistics compiled for relatively small populations, or when there are a small number of events in a population, present several challenges. First and foremost, statistics developed for this report must preserve confidentiality. Breaches of confidentiality are usually more of an issue when the population for which the data are developed is relatively small.

A second concern involves interpreting data based on a small number of events irrespective of the size of the population, because random fluctuation can be relatively large when the number of events is small. Because of these random fluctuations, rates based on small numbers might not be as stable as those based on larger numbers and so they can have limited precision. For example, in 1996 there were 9 infant injury-related deaths in Washington State, for an infant death rate of 6.6 per 100,000. In 1997, there were 18 infant injury-related deaths in Washington, for an infant death rate of 15.6 per 100,000. From these two years of data, can we predict what the infant injury-related death rate will be in 1998? Not really.

This instability makes it difficult to use rates based on small numbers for program planning or assessment. In fact, considerable caution should be used in interpreting any data where the number of events is small – usually less than 20 is considered small.

To ensure confidentiality and to provide relatively stable estimates of rates, we have combined three or five years of data for rates that were calculated for sub-populations within the state, such as when presenting state-level data by age group, gender, and cause of injury. Three years of data were combined for the time trend analysis.

In the "Circumstances Surrounding Deaths from Washington Child Death Review Data" sections, percentages are excluded when less than 25 deaths were reviewed because including percentages when the number of events is small can limit precision and confidentiality of the data.

### Comparability Ratios

When comparing trends in death rates that span a revision in ICD codes, such as that between ICD 9 (effective during 1980-1998) and ICD 10 (effective starting in 1999), any discontinuity in the trend should be considered. Ratios of the number of deaths recoded using ICD-10 to the number originally coded using ICD-9 (obtained from a study of a large sample of 1996 deaths in the United States) can assist when trying to determine whether a trend noted in the 1980-1998 period has continued in 1999-2001. The ratios are called comparability ratios.

For most causes of injury, comparability ratios have only been calculated for unintentional injuries, and for suicide and homicide by combining all causes (see table below). Because the majority, if not all, of injuries to motor vehicle occupants, bicyclists, pedestrians, and those due to drowning, falls, and fire were unintentional in nature, the comparability ratios calculated for unintentional injuries could be used as an estimate.

Cause	Comparability Ratio
Drowning	0.9965
Falls	0.8409
Fire/burn	0.9743
Firearms	N/A
Motor vehicle occupant	0.9754
Bicyclist	0.9754
Pedestrian	0.9754
Poisoning	N/A
Suffocation	N/A
Suicide	0.9962
Homicide	0.9983

For every cause of injury where a comparability ratio is available, the comparability ratio is very close to "one", with the exception of injuries due to falls. This means that the coding changes did not substantially affect mortality rates between ICD 9 and ICD 10. Therefore, the trend analyses in this report included 1999-2001, and the comparability ratios were not applied.

### **Time Trend Analysis Using Hospitalization Data in the Bicycle Chapter**

The bicycle chapter is the only chapter with a time trend analysis using hospitalization data. Because hospitalization data is affected by changes in hospitalization practices (such as performing more procedures on an outpatient basis), it is hard to interpret the results of such an analysis. We would likely find a decline in many injury-related hospitalization rates over time, but it would be hard to differentiate how much was due to changing hospitalization practices or injury prevention efforts.

In the bicycle chapter, to minimize the effect of changes in hospitalization practices, we compared bicycle-related head injuries to other bicycle-related injuries. The objective of the analysis was to see if bicycle-related head injuries were declining faster than other bicycle-related injuries; we hypothesized that this would occur because of the increase in educational efforts related to wearing bicycle helmets.

The methods used to conduct this comparison include a poisson regression to calculate the slopes of the trend line for head injuries and other injuries, and a Students t-test to see if the slope for bicycle-related head injuries were decreasing faster than the slope for other bicycle-related injuries.

### **Time Trend Analysis in Child Abuse and Neglect Chapter**

The number of accepted referrals to Child Protective Services have been unduplicated; that is, each child is counted only once in that year. However, unduplicated data are not available for years prior to 1998. Because only four years of unduplicated data are available, it was not possible to do a time trend analysis.

### **Child Death Review Definition of Abuse and Neglect**

Local child death review teams were asked to examine the circumstances in every child's life, including the child and family history of abuse and neglect. They were asked to consider

whether physical abuse or neglect was a single act or omission, a pattern for that child, or a pattern in the child's family, involving more than just that child.

Local Child Death Review teams were given the definitions below, provided by the Department of Social and Health Services in 1998, to assist them in determining whether abuse or neglect was a factor in the death.

"Physical abuse" is defined as:

The physical discipline of a child is not unlawful when it is reasonable and moderate and is inflicted by a parent, teacher, or guardian for purposes of restraining or correcting the child.

The following actions are presumed unreasonable:

1. Throwing, kicking, burning, or cutting a child.
2. Striking child with a closed fist.
3. Shaking a child under age three.
4. Interfering with a child's breathing.
5. Threatening a child with a deadly weapon.
6. Doing any other act that is likely to cause and which does cause bodily harm greater than transient pain or minor temporary marks.

"Neglect" is defined as:

An act or omission that evidences a serious disregard of consequences of such magnitude as to constitute a clear and present danger to the child's health, welfare, and safety. These acts may include but are not limited to:

1. Failure to provide adequate food, shelter, clothing, supervision or health care. Poverty and/or homelessness in and of themselves do not constitute negligent treatment or maltreatment.
2. Actions or omissions resulting in injury to or creating a substantial risk to the physical and/or mental development of a child.

## APPENDIX E

### County Data

#### Injury Deaths by County of Residence, Washington Children Ages 0-17, 1997-2001

County	Number of Injury Deaths	Injury Death Rate	Number of Unintentional Injury Deaths	Unintentional Injury Death Rate	Number of Intentional Injury Deaths	Intentional Injury Death Rate
Adams	5	17.8	5	17.8	0	*
Asotin	6	22.4	4	*	2	*
Benton	27	12.8	20	9.5	6	2.4
Chelan	18	19.2	17	18.2	0	*
Clallam	19	26.4	14	19.4	5	1.4
Clark	54	11.1	39	8.0	13	1.9
Columbia	0	*	0	*	0	*
Cowlitz	34	27.1	22	17.6	10	6.4
Douglas	8	16.7	8	16.7	0	*
Ferry	2	*	2	*	0	*
Franklin	13	15.3	11	13.0	2	*
Garfield	1	*	1	*	0	*
Grant	34	28.7	30	25.3	4	*
Grays Harbor	17	19.2	12	13.6	5	2.3
Island	13	14.3	10	11.0	3	*
Jefferson	5	19.1	4	*	1	*
King	216	11.0	148	7.6	61	1.0
Kitsap	40	12.8	30	9.6	6	1.3
Kittitas	3	8.6	2	*	1	*
Klickitat	7	26.9	7	26.9	0	*
Lewis	19	20.6	16	17.3	3	*
Lincoln	4	30.9	4	*	0	*
Mason	14	24.1	12	20.6	2	*
Okanogan	22	39.5	16	28.7	6	5.4
Pacific	10	43.4	7	30.4	2	*
Pend Oreille	7	44.2	5	31.6	1	*
Pierce	144	15.2	89	9.4	51	2.4
San Juan	0	*	0	*	0	*
Skagit	21	15.6	17	12.6	4	*
Skamania	3	22.7	3	*	0	*
Snohomish	94	11.5	71	8.7	22	1.0
Spokane	76	14.0	48	8.8	24	1.8
Stevens	15	26.3	13	22.8	2	*
Thurston	40	15.1	30	11.4	9	2.3
Wahkiakum	2	*	1	*	1	*
Walla Walla	13	18.9	11	16.0	2	*
Whatcom	28	13.9	26	12.9	1	*
Whitman	6	16.0	6	16.0	0	*
Yakima	77	21.6	59	16.5	18	1.7
<b>State Total</b>	<b>1117</b>	<b>14.8</b>	<b>820</b>	<b>10.8</b>	<b>267</b>	<b>1.6</b>

Data Source: Vital Registration System. Annual Statistical Files, Death Certificate Data: Washington State Department of Health, Center for Health Statistics, 1980-2001.



# ACKNOWLEDGEMENTS

---

## **Lead Author<sup>1</sup>:**

Jennifer Sabel, PhD  
Injury Prevention Program

## **Overall Reviewers:**

Ilene Silver, MPH  
Injury Prevention Program

Diane Pilkey, RN, MPH  
Maternal and Child Health

Luann D'Ambrosio, MEd  
Harborview Injury Prevention and Research Center

Christian Hanna, MPH  
Children's Safety Network

---

## **Introduction**

Contributing Authors:  
Diane Pilkey, RN, MPH

Reviewers:  
Mary Borges  
Injury Prevention Program

Debbie Ruggles, MBA  
Injury Prevention Program

## **Motor Vehicle Occupant Injury**

Reviewers:  
Mary LeMier, MPH  
Injury Prevention Program

Dick Doane, MA, MPA  
Washington State Traffic Safety Commission

Angie Ward  
Washington State Traffic Safety Commission

Kathryn Kruger  
Washington Safety Restraint Coalition

## **Drowning**

Reviewer:  
Mary LeMier, MPH

Kathy Williams, MS  
EMS & Trauma

Elizabeth Bennett, MPH, CHES  
Linda Quann, MD  
Children's Hospital and Regional Medical Center

## **Poisoning**

Reviewer:  
Lillian Bensley, PhD  
Non-Infectious Conditions Epidemiology

## **Fire and Burn Injuries**

Reviewer:  
Karen Jones  
Deputy State Fire Marshal

## **Bicycle Injury**

Reviewer:  
Julie Salathe, PhD  
Cascade Bicycle Club

## **Injuries Due to Falls**

Reviewer:  
Mary Borges

## **Homicide**

Reviewer:  
Debbie Ruggles, MBA  
Steve Eckstrom, MSW  
Washington State Department of Corrections

## **Suicide**

Reviewer:  
Debbie Ruggles, MBA  
Sue Eastgard, MSW  
Youth Suicide Prevention Program

## **Child Abuse**

Authors:  
Diane Pilkey, RN, MPH  
Lillian Bensley, PhD

Reviewer:  
Joan Sharp, MNPL  
Washington Council for Prevention of Child  
Abuse & Neglect

## **Occupational**

Authors:  
Mary Miller, RN, MN  
Washington State Department of Labor & Industries

Reviewer:  
Jennifer Sabel, PhD

---

## **Special Acknowledgements:**

The planning committee (Elizabeth Bennett, Mary Borges, Mary LeMier, Diane Pilkey, Debbie Ruggles, Ilene Silver, & Kathy Williams) for their guidance.

Local Child Death Review Teams for their contribution of data from their reviews, and Diane Pilkey for summarizing the data from the local teams. These data are invaluable to this report.

This report was supported by grant #U17/CCU01936405 from the Centers for Disease Prevention and Control. Its contents are solely the responsibility of the authors and do not represent the official views of the Centers for Disease Control and Prevention.

<sup>1</sup> Unless otherwise noted all authors and reviewers work at the Washington State Department of Health.



**PUBLIC HEALTH**  
ALWAYS WORKING FOR A SAFER AND  
HEALTHIER WASHINGTON



For more information:

Jennifer Sabel

Washington State Department of Health

Injury Prevention Program

7211 Cleanwater Lane, Building 11

Olympia, WA 98504-7832

360-236-3756

[jennifer.sabel@doh.wa.gov](mailto:jennifer.sabel@doh.wa.gov)